TOP250 E8278860

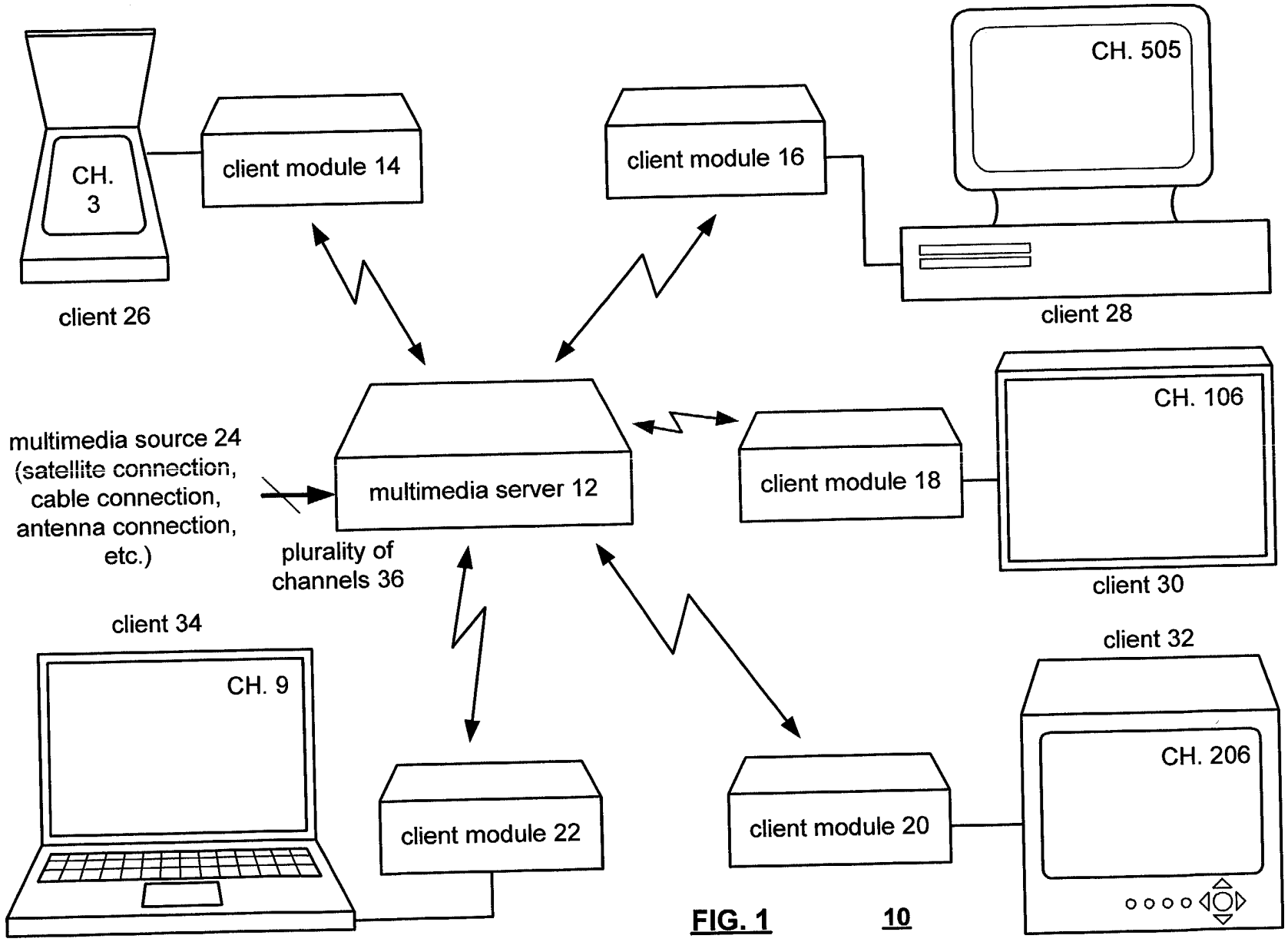


FIG. 1 10

TOP250 E02T9860

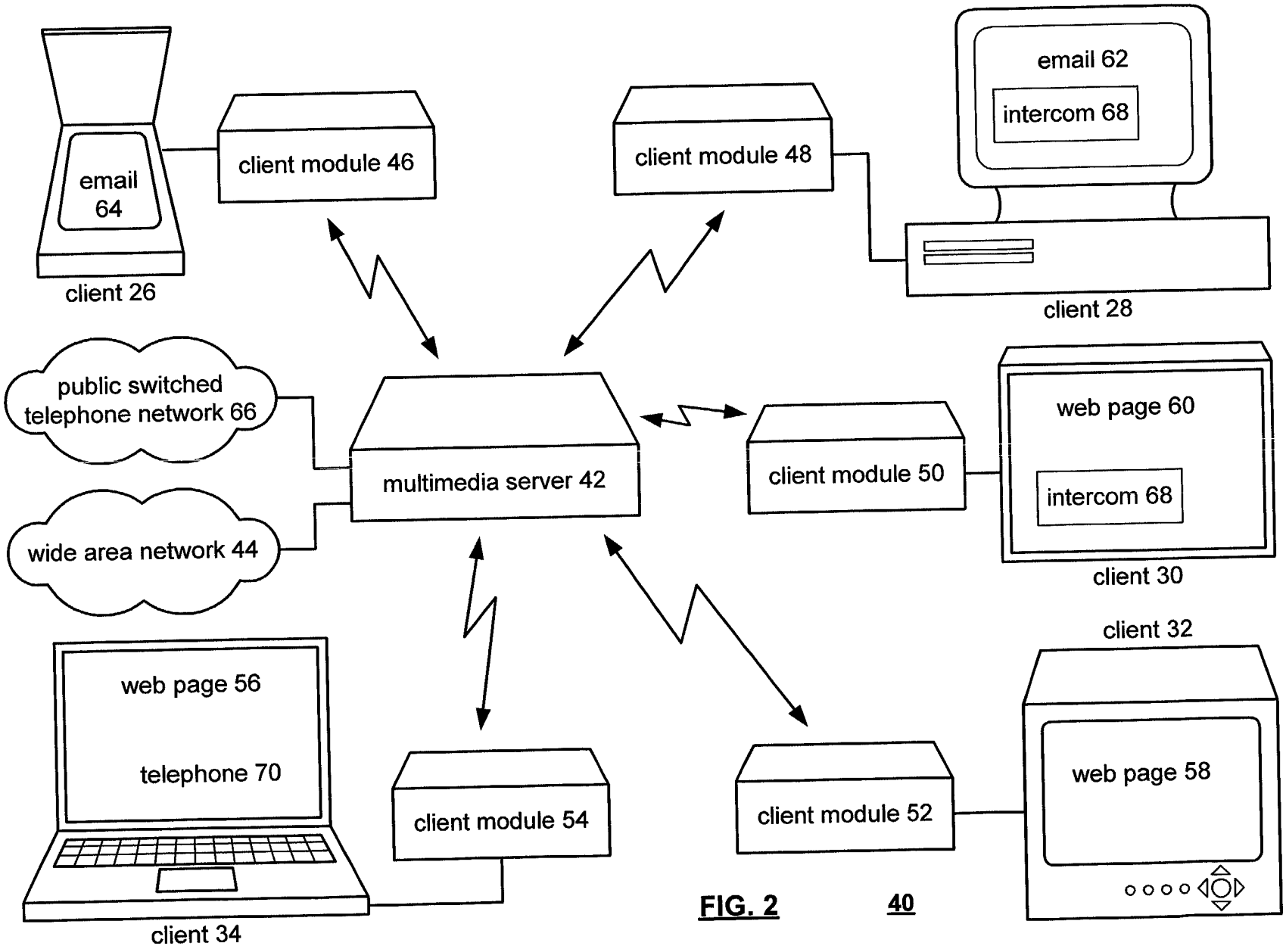


FIG. 2 40

TOSZ90 C0Z7990

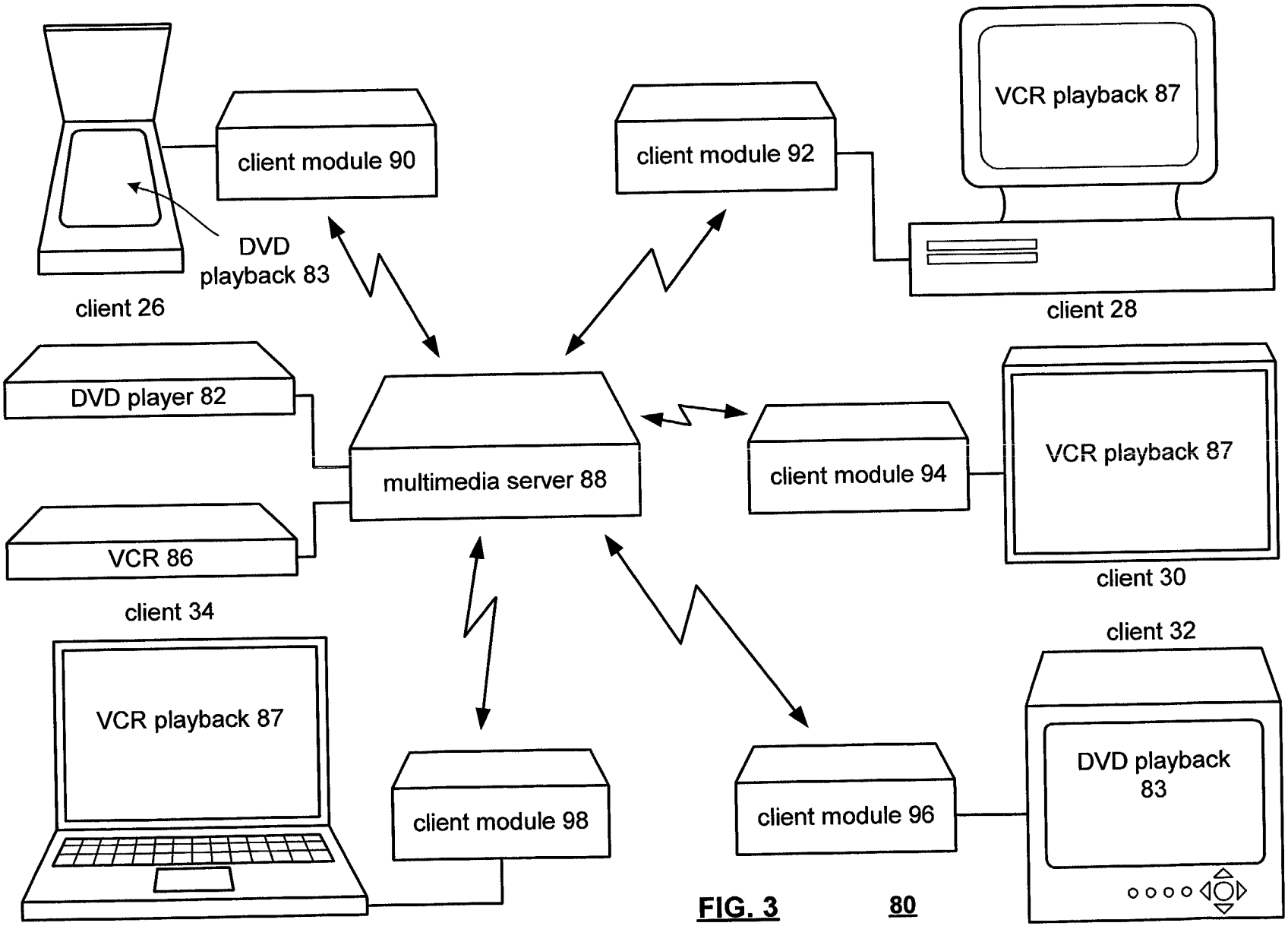


FIG. 3 80

TOMZSO' E0Z/9/0O

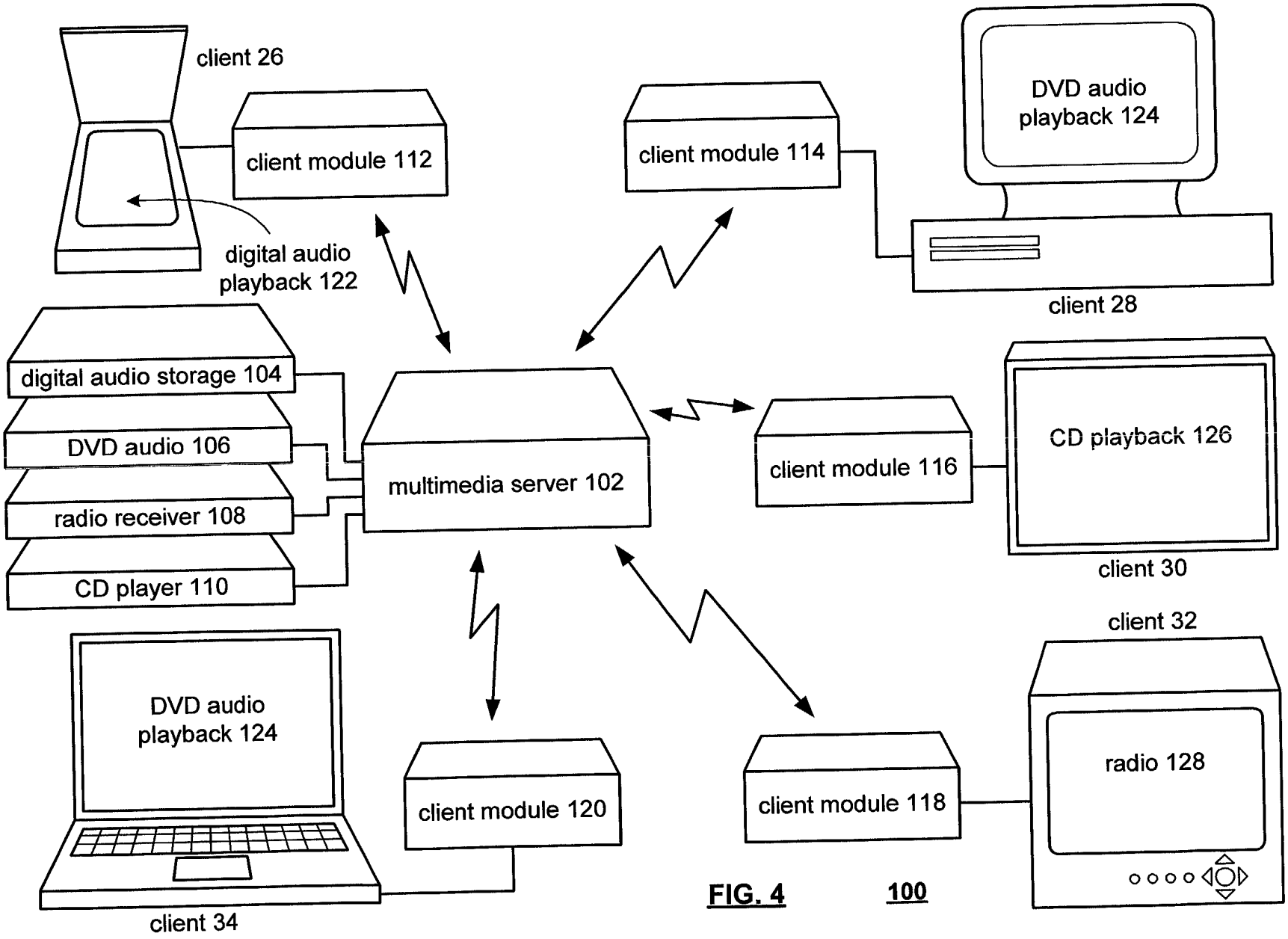


FIG. 4 100

TOR250 E8276860

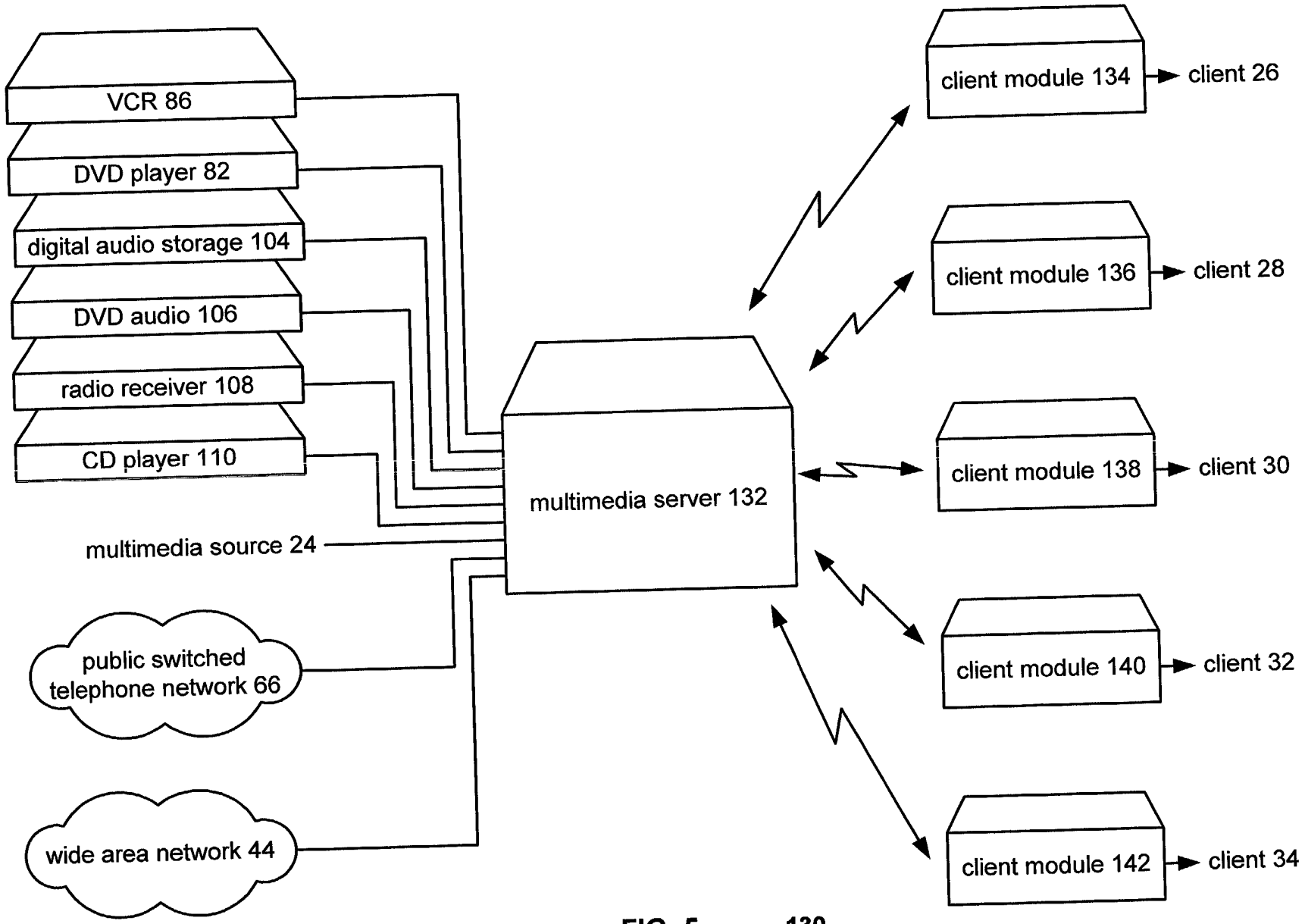


FIG. 5 130

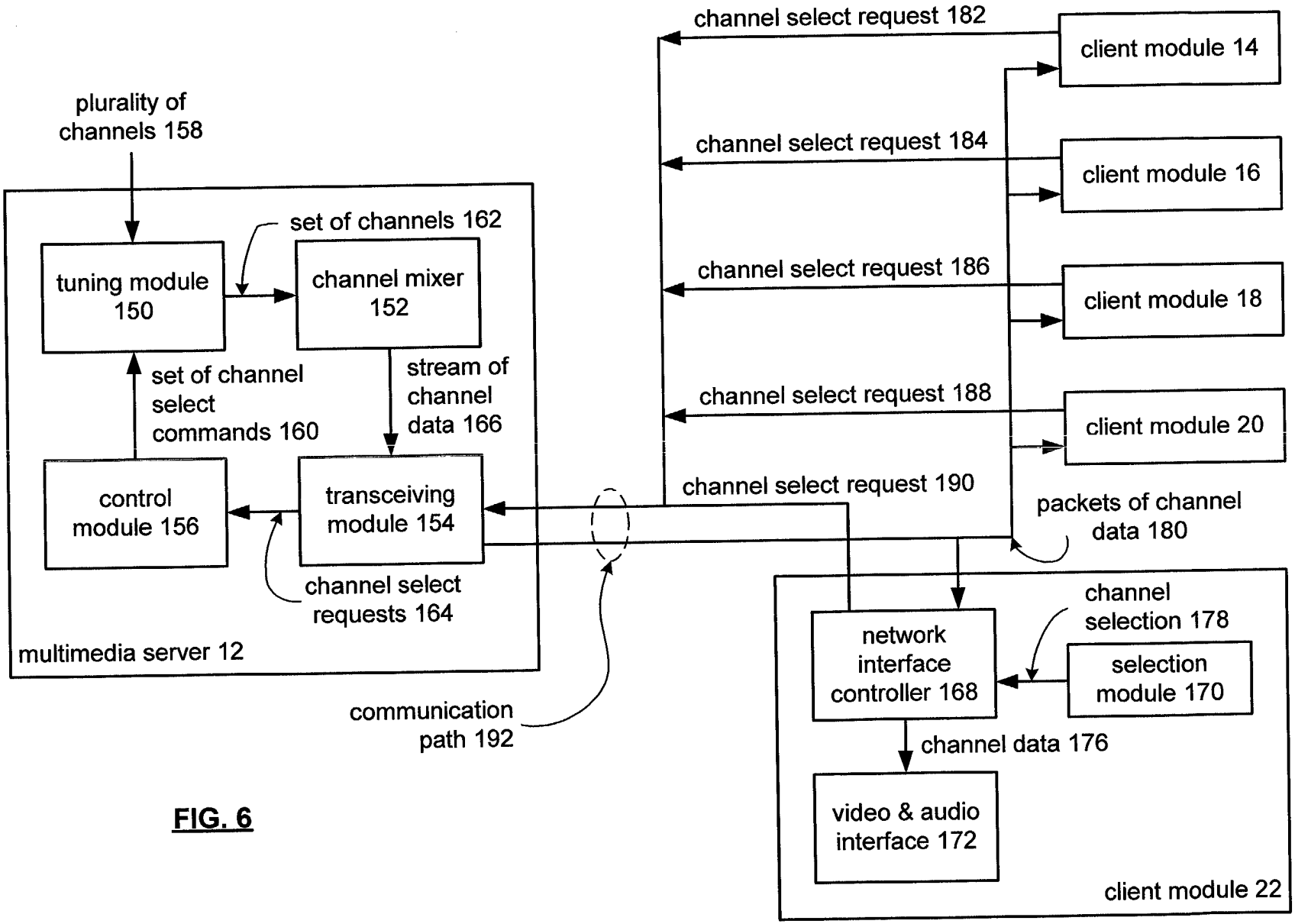

channel select request 182
client module 14
plurality of channels 158
channel select request 184
client module 16
set of channels 162
tuning module 150
channel mixer 152
channel select request 186
client module 18
stream of channel data 166
set of channel select commands 160
channel select request 188
client module 20
control module 156
transceiving module 154
channel select request 190
packets of channel data 180
channel select requests 164
multimedia server 12
channel selection 178
network interface controller 168
selection module 170
communication path 192
channel data 176
video & audio interface 172
client module 22

FIG. 6

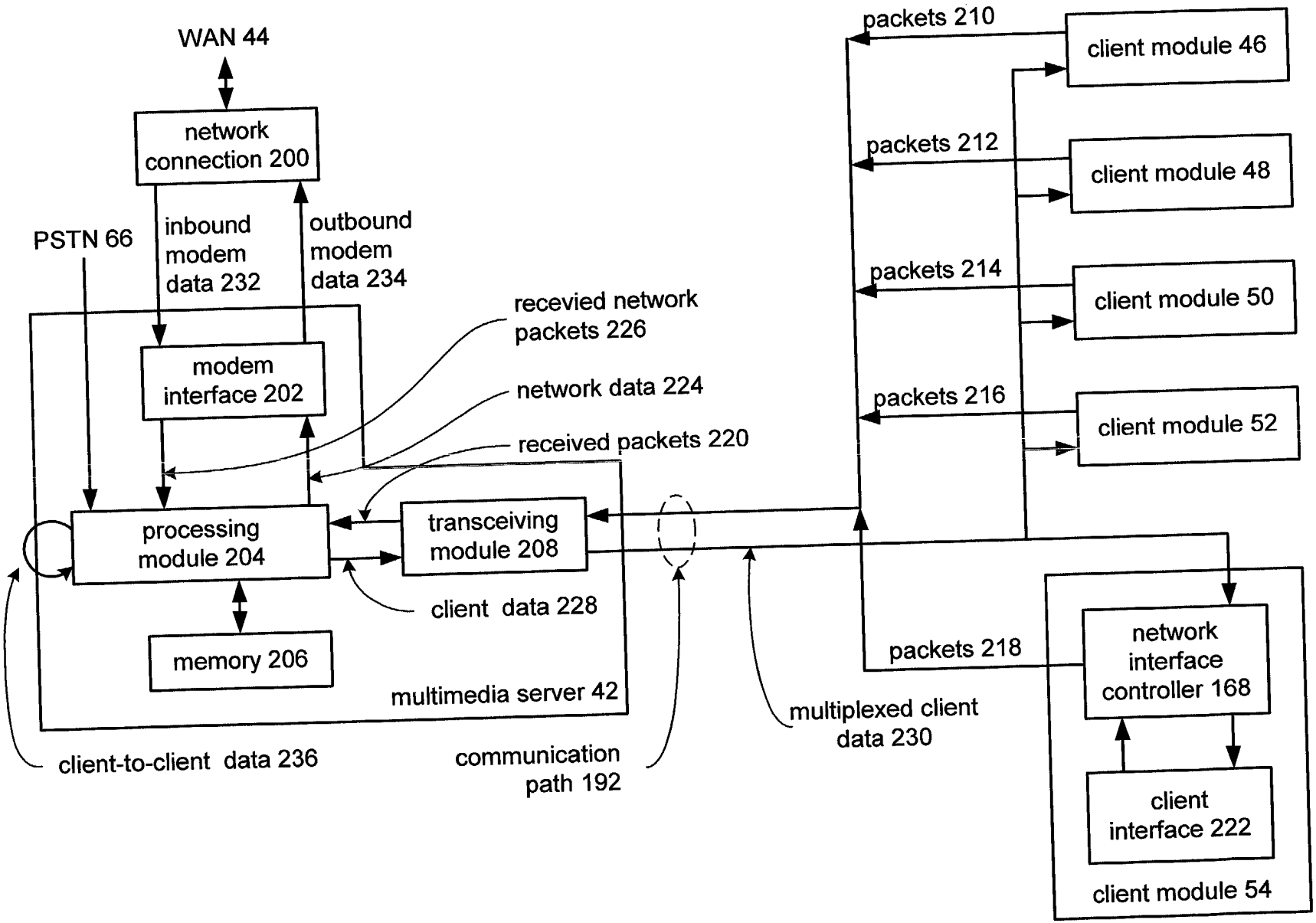

WAN 44
network connection 200
PSTN 66
inbound modem data 232
outbound modem data 234
modem interface 202
recevied network packets 226
network data 224
received packets 220
processing module 204
transceiving module 208
client data 228
memory 206
multimedia server 42
client-to-client data 236
communication path 192
packets 210
client module 46
packets 212
client module 48
packets 214
client module 50
packets 216
client module 52
multiplexed client data 230
packets 218
network interface controller 168
client interface 222
client module 54

FIG. 7

Tomson Exhibit

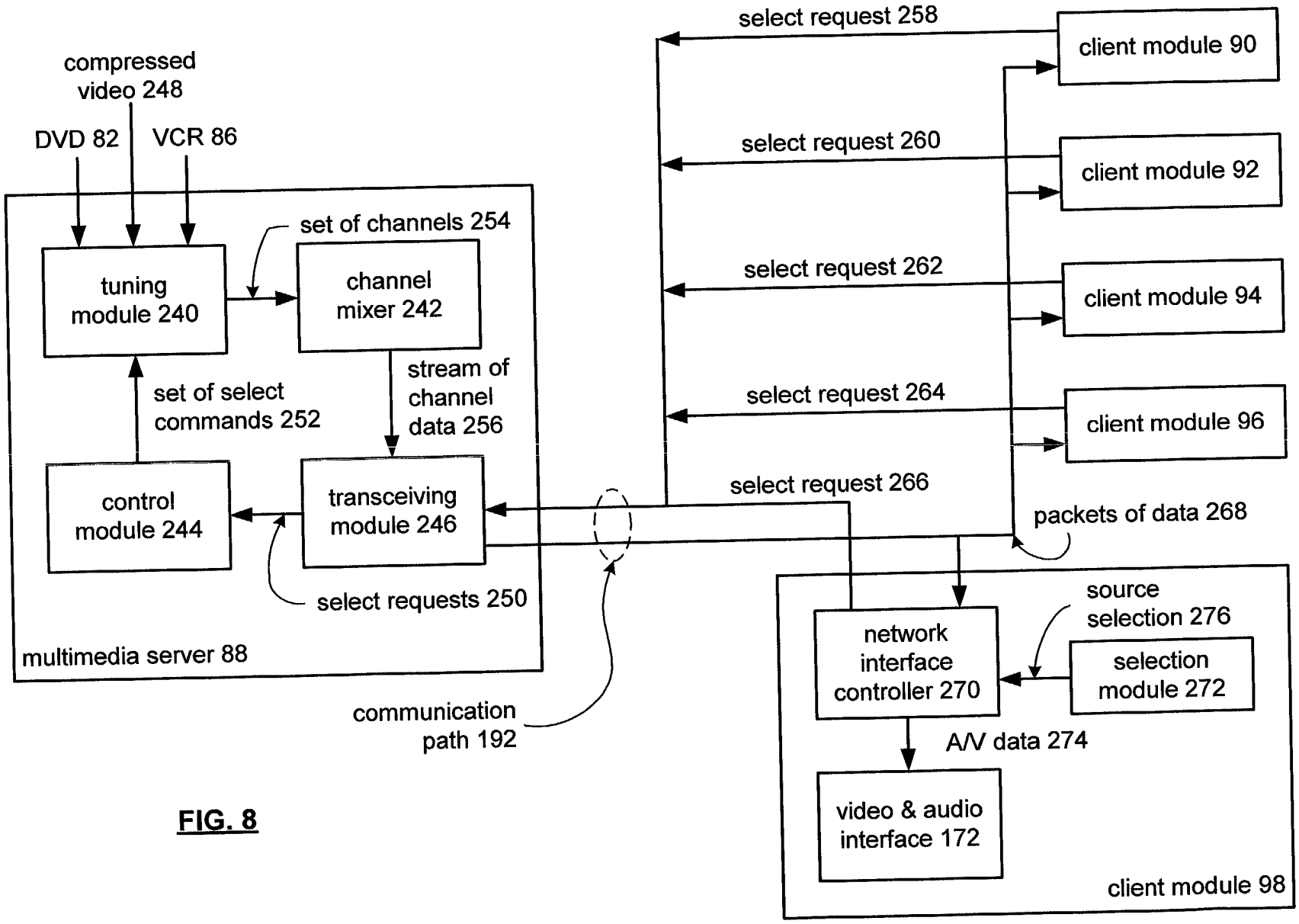


FIG. 8

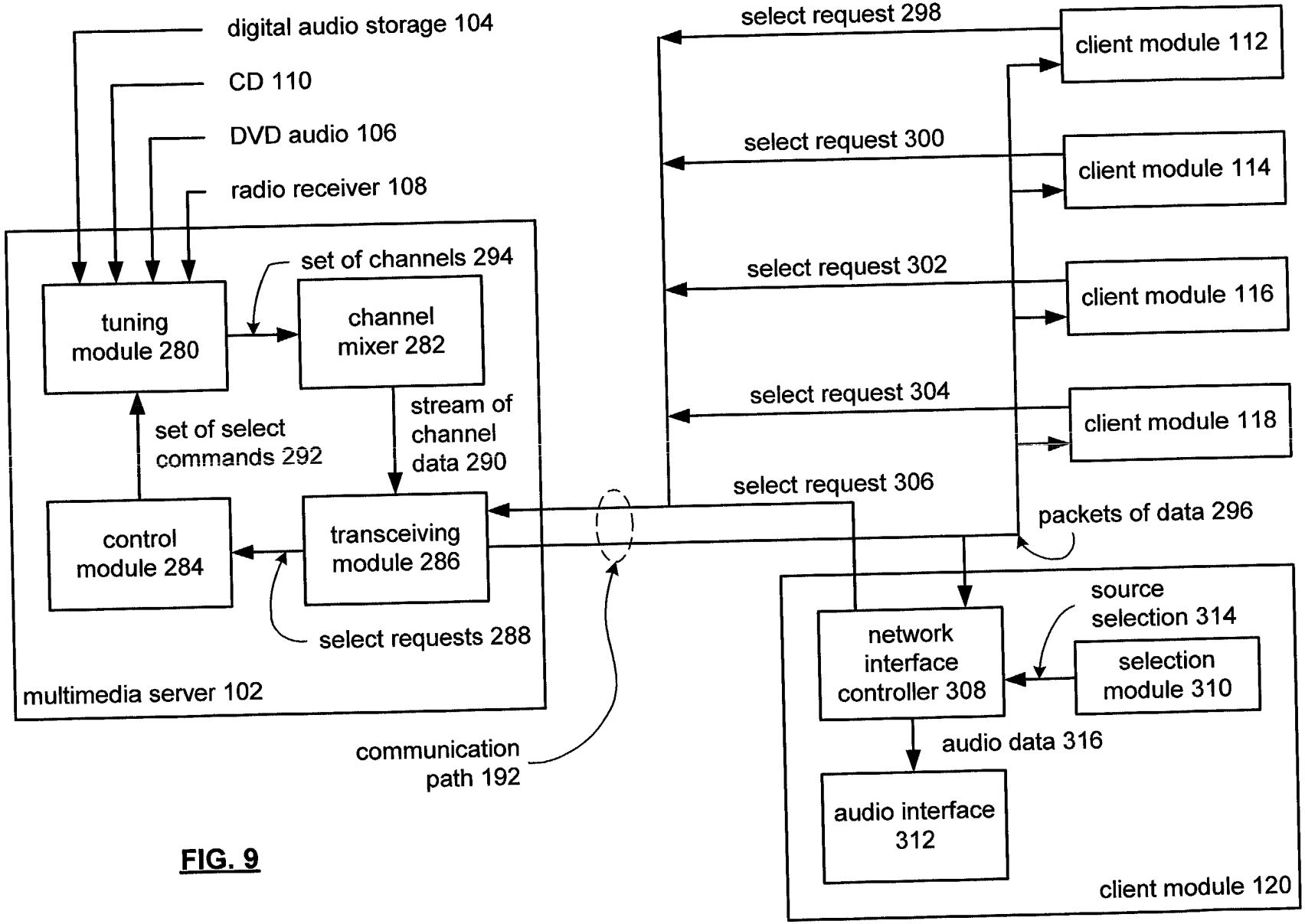

digital audio storage 104
CD 110
DVD audio 106
radio receiver 108
set of channels 294
tuning module 280
channel mixer 282
stream of channel data 290
set of select commands 292
control module 284
transceiving module 286
select requests 288
multimedia server 102
communication path 192
select request 298
select request 300
select request 302
select request 304
select request 306
client module 112
client module 114
client module 116
client module 118
packets of data 296
source selection 314
network interface controller 308
selection module 310
audio data 316
audio interface 312
client module 120

FIG. 9

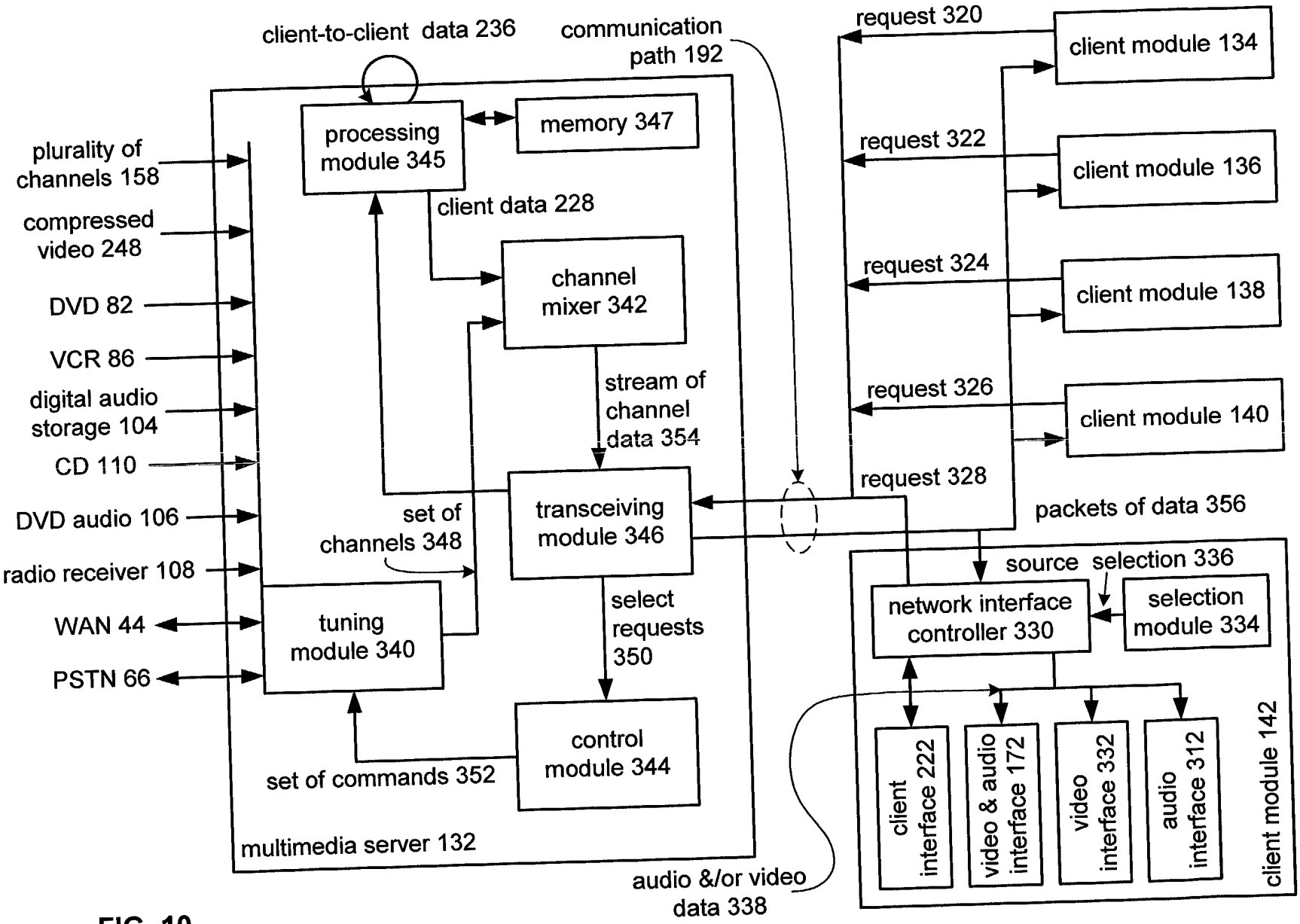

client-to-client data 236
communication path 192
request 320
client module 134
processing module 345
memory 347
request 322
client module 136
plurality of channels 158
client data 228
compressed video 248
channel mixer 342
request 324
client module 138
DVD 82
VCR 86
stream of channel data 354
request 326
client module 140
digital audio storage 104
CD 110
request 328
transceiving module 346
packets of data 356
DVD audio 106
set of channels 348
source selection 336
radio receiver 108
network interface controller 330
selection module 334
WAN 44
tuning module 340
select requests 350
PSTN 66
client interface 222
video & audio interface 172
video interface 332
audio interface 312
client module 142
control module 344
set of commands 352
multimedia server 132
audio &/or video data 338

FIG. 10

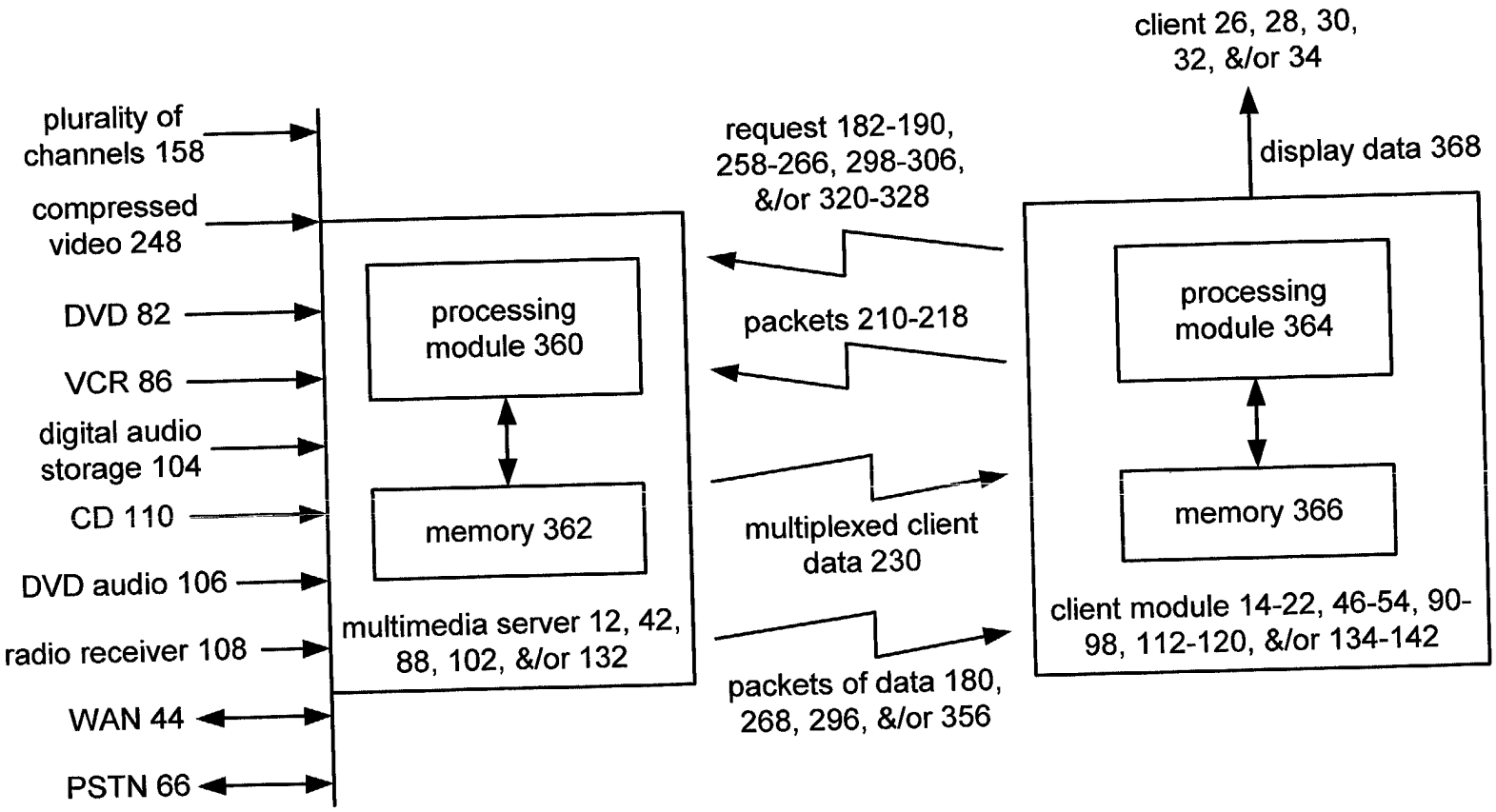

client 26, 28, 30, 32, &/or 34
display data 368
plurality of channels 158
compressed video 248
DVD 82
VCR 86
digital audio storage 104
CD 110
DVD audio 106
radio receiver 108
WAN 44
PSTN 66
processing module 360
memory 362
multimedia server 12, 42, 88, 102, &/or 132
request 182-190, 258-266, 298-306, &/or 320-328
packets 210-218
multiplexed client data 230
packets of data 180, 268, 296, &/or 356
processing module 364
memory 366
client module 14-22, 46-54, 90-98, 112-120, &/or 134-142

FIG. 11

Tomeso" e8278868

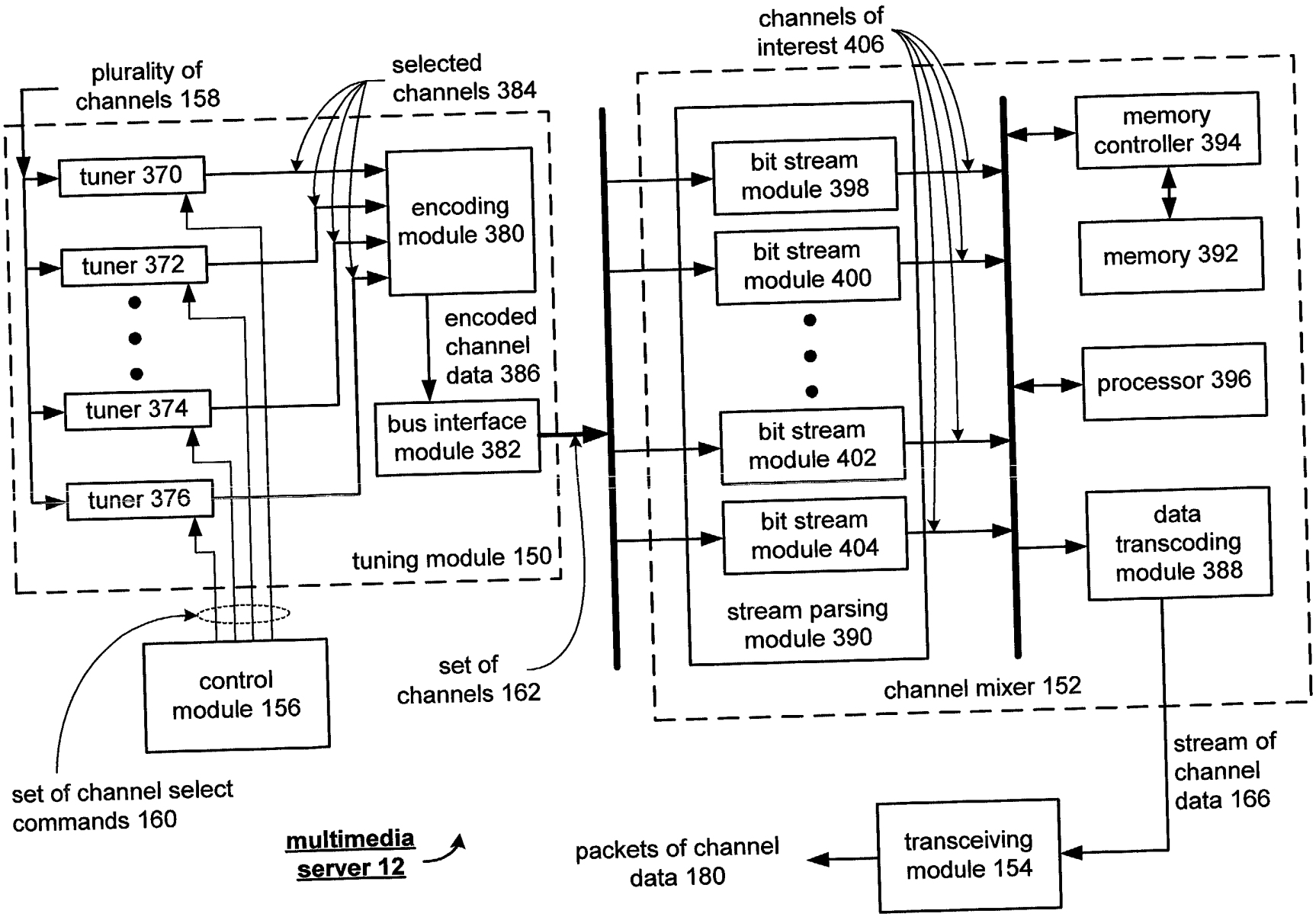


FIG. 12

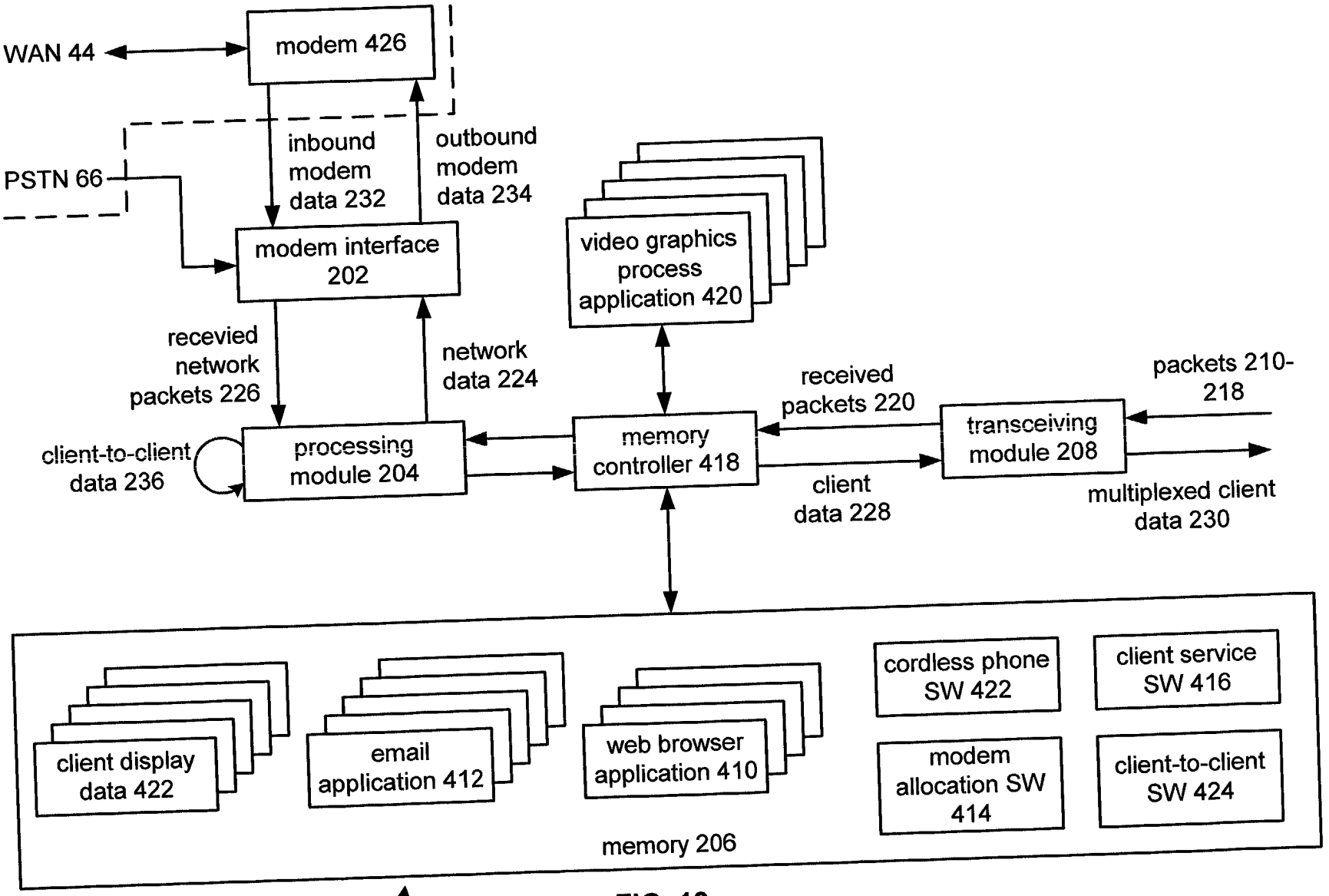

WAN 44
modem 426
PSTN 66
inbound modem data 232
outbound modem data 234
modem interface 202
video graphics process application 420
recevied network packets 226
network data 224
client-to-client data 236
processing module 204
memory controller 418
received packets 220
transceiving module 208
packets 210-218
client data 228
multiplexed client data 230
client display data 422
email application 412
web browser application 410
cordless phone SW 422
client service SW 416
modem allocation SW 414
client-to-client SW 424
memory 206
multimedia server 42

FIG. 13

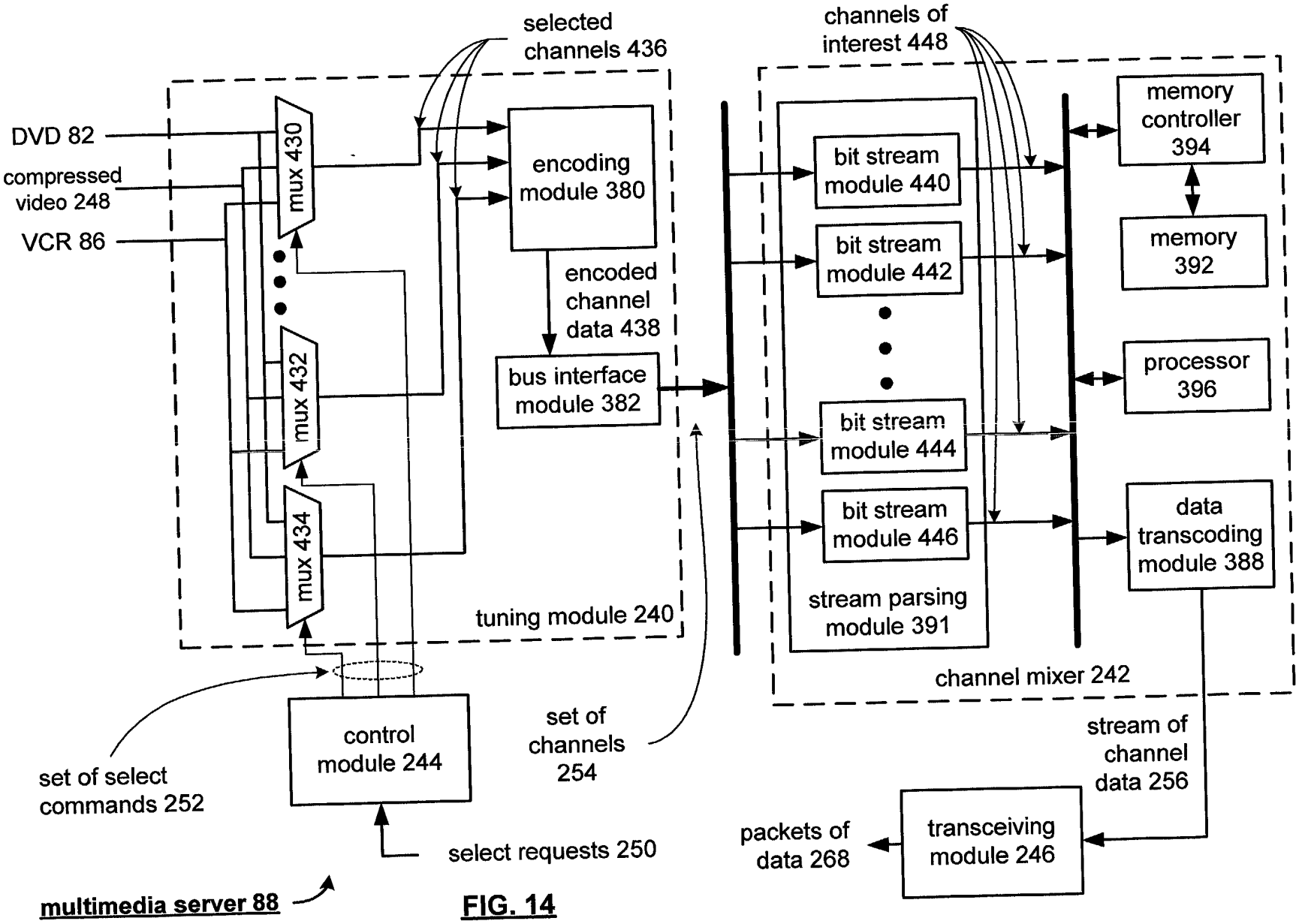

selected channels 436
channels of interest 448
DVD 82
compressed video 248
VCR 86
mux 430
mux 432
mux 434
encoding module 380
encoded channel data 438
bus interface module 382
tuning module 240
bit stream module 440
bit stream module 442
bit stream module 444
bit stream module 446
stream parsing module 391
channel mixer 242
memory controller 394
memory 392
processor 396
data transcoding module 388
stream of channel data 256
transceiving module 246
packets of data 268
control module 244
set of select commands 252
set of channels 254
select requests 250
multimedia server 88

FIG. 14

Tuesday, 28 February 2006

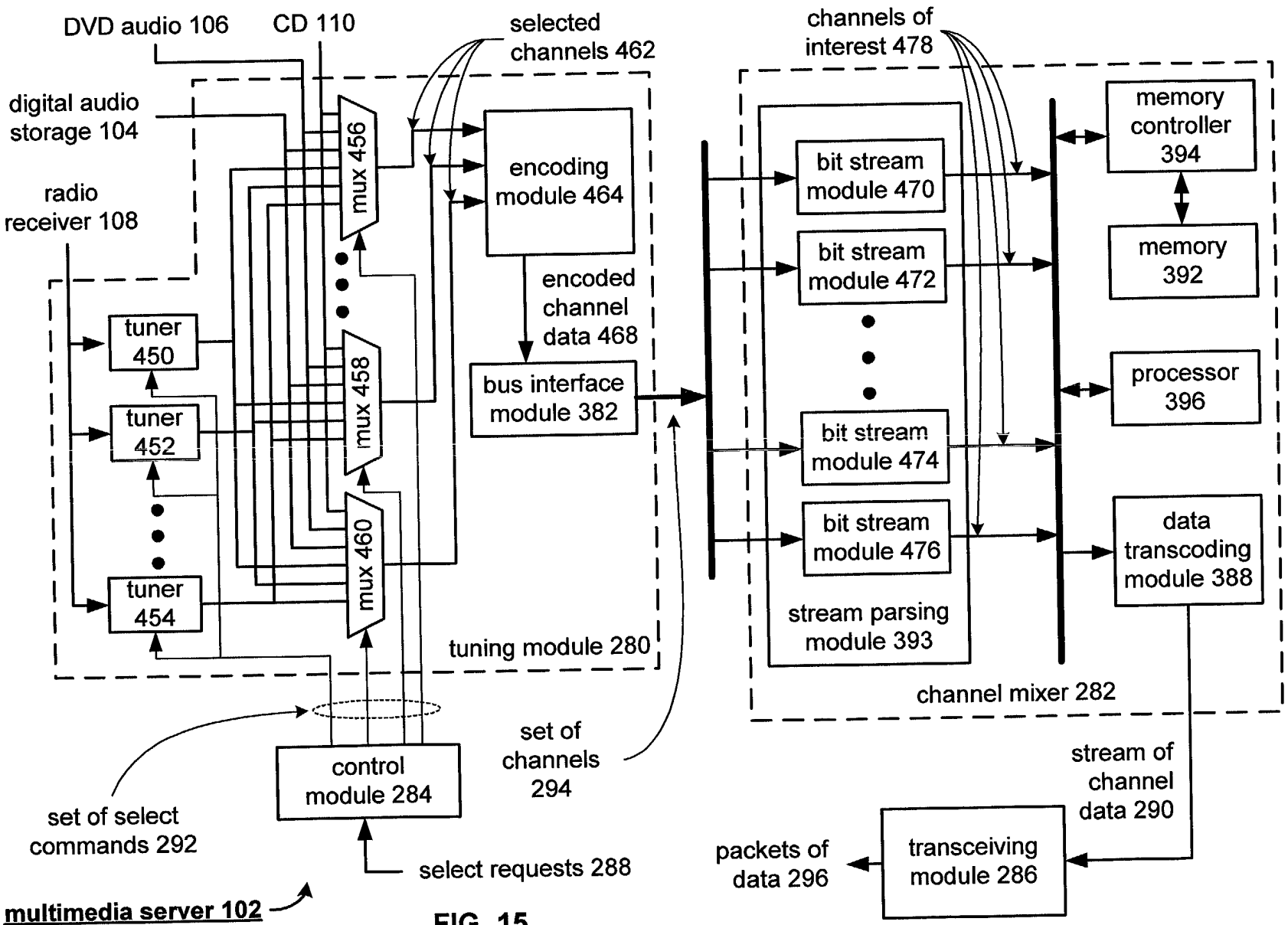


FIG. 15

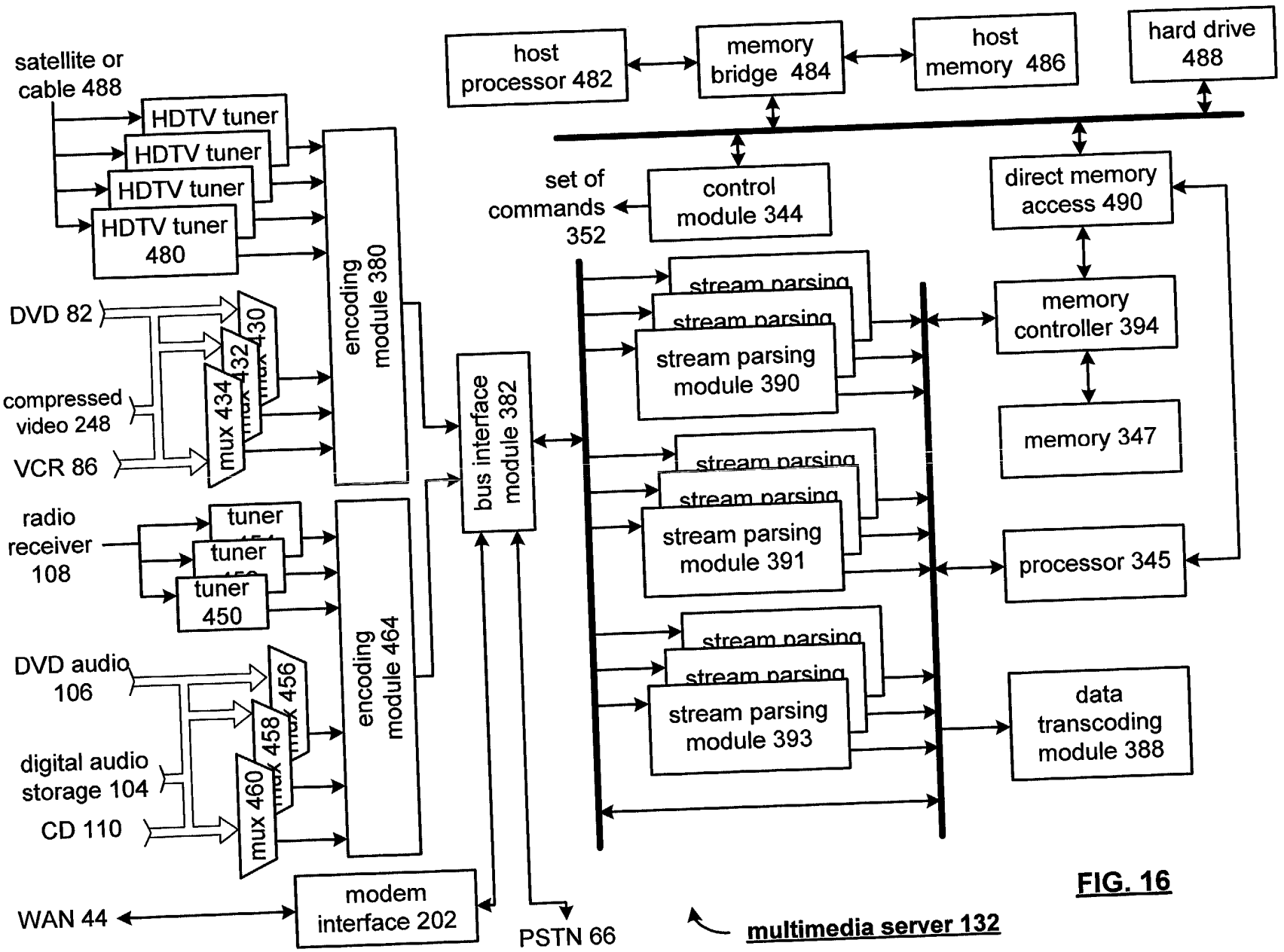

satellite or cable 488
HDTV tuner
HDTV tuner
HDTV tuner
HDTV tuner 480
DVD 82
compressed video 248
VCR 86
mux 430
mux 432
mux 434
encoding module 380
radio receiver 108
tuner
tuner
tuner 450
DVD audio 106
digital audio storage 104
CD 110
mux 456
mux 458
mux 460
encoding module 464
WAN 44
modem interface 202
PSTN 66
bus interface module 382
host processor 482
memory bridge 484
host memory 486
hard drive 488
set of commands 352
control module 344
direct memory access 490
memory controller 394
memory 347
processor 345
data transcoding module 388
stream parsing
stream parsing
stream parsing module 390
stream parsing
stream parsing
stream parsing module 391
stream parsing
stream parsing
stream parsing module 393
multimedia server 132

FIG. 16

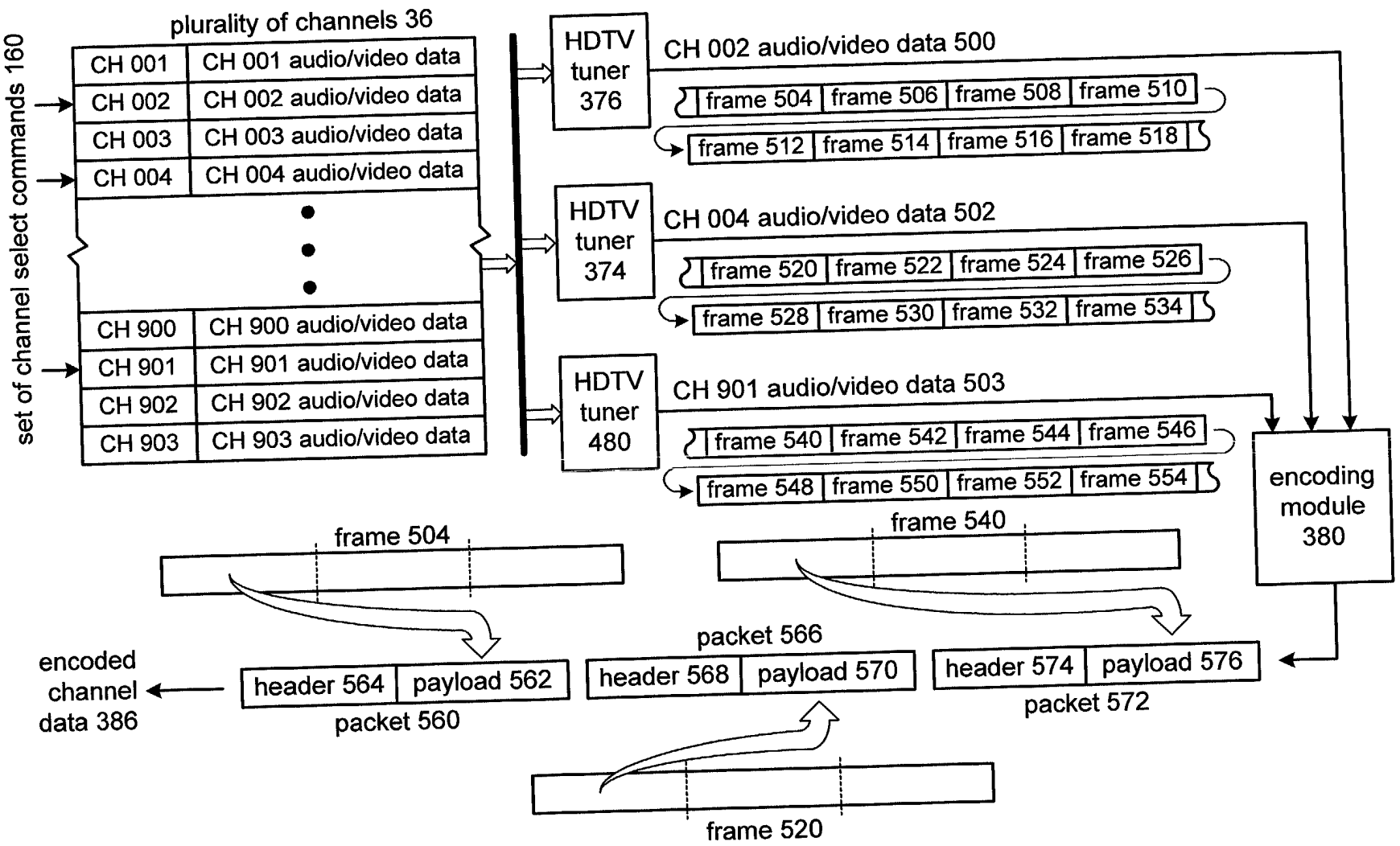

plurality of channels 36
set of channel select commands 160
CH 001
CH 001 audio/video data
CH 002
CH 002 audio/video data
CH 003
CH 003 audio/video data
CH 004
CH 004 audio/video data
CH 900
CH 900 audio/video data
CH 901
CH 901 audio/video data
CH 902
CH 902 audio/video data
CH 903
CH 903 audio/video data
HDTV tuner 376
HDTV tuner 374
HDTV tuner 480
CH 002 audio/video data 500
frame 504
frame 506
frame 508
frame 510
frame 512
frame 514
frame 516
frame 518
CH 004 audio/video data 502
frame 520
frame 522
frame 524
frame 526
frame 528
frame 530
frame 532
frame 534
CH 901 audio/video data 503
frame 540
frame 542
frame 544
frame 546
frame 548
frame 550
frame 552
frame 554
encoding module 380
frame 504
frame 540
packet 566
encoded channel data 386
header 564
payload 562
packet 560
header 568
payload 570
header 574
payload 576
packet 572
frame 520

FIG. 17

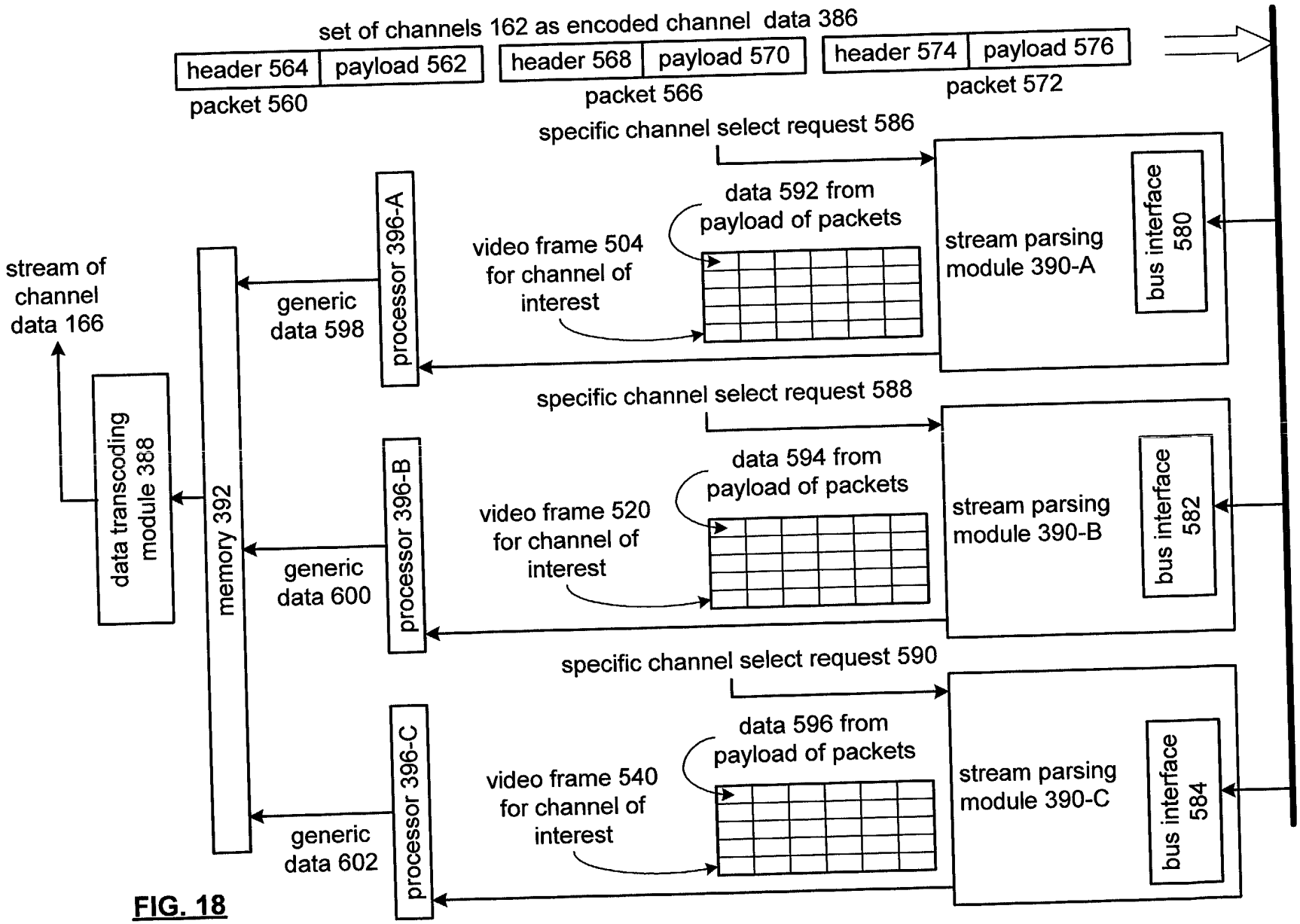

set of channels 162 as encoded channel data 386
header 564
payload 562
packet 560
header 568
payload 570
packet 566
header 574
payload 576
packet 572
specific channel select request 586
data 592 from payload of packets
video frame 504 for channel of interest
stream parsing module 390-A
bus interface 580
processor 396-A
generic data 598
stream of channel data 166
specific channel select request 588
data 594 from payload of packets
video frame 520 for channel of interest
stream parsing module 390-B
bus interface 582
processor 396-B
generic data 600
data transcoding module 388
memory 392
specific channel select request 590
data 596 from payload of packets
video frame 540 for channel of interest
stream parsing module 390-C
bus interface 584
processor 396-C
generic data 602

FIG. 18

TOR250 C82R5860

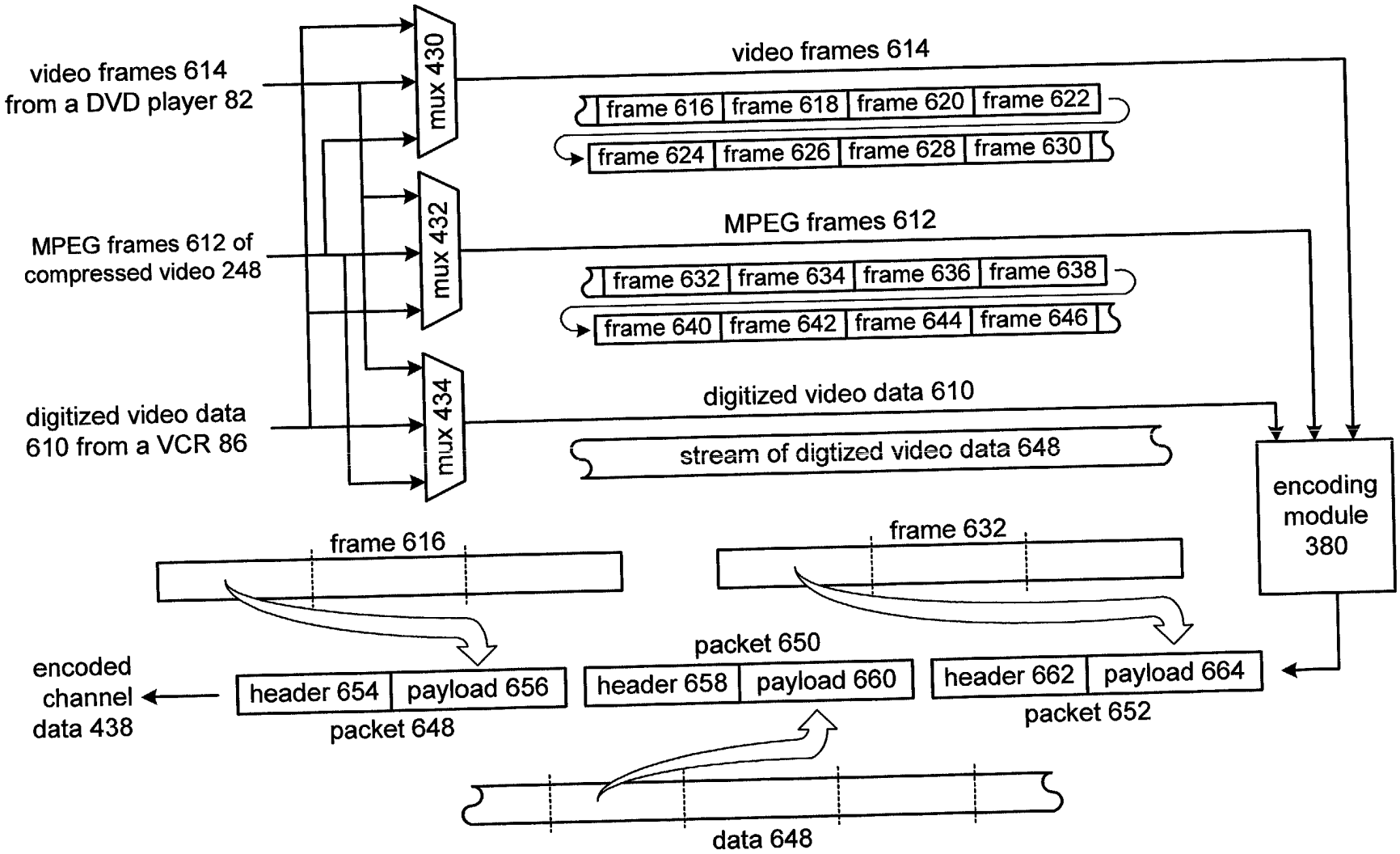


FIG. 19

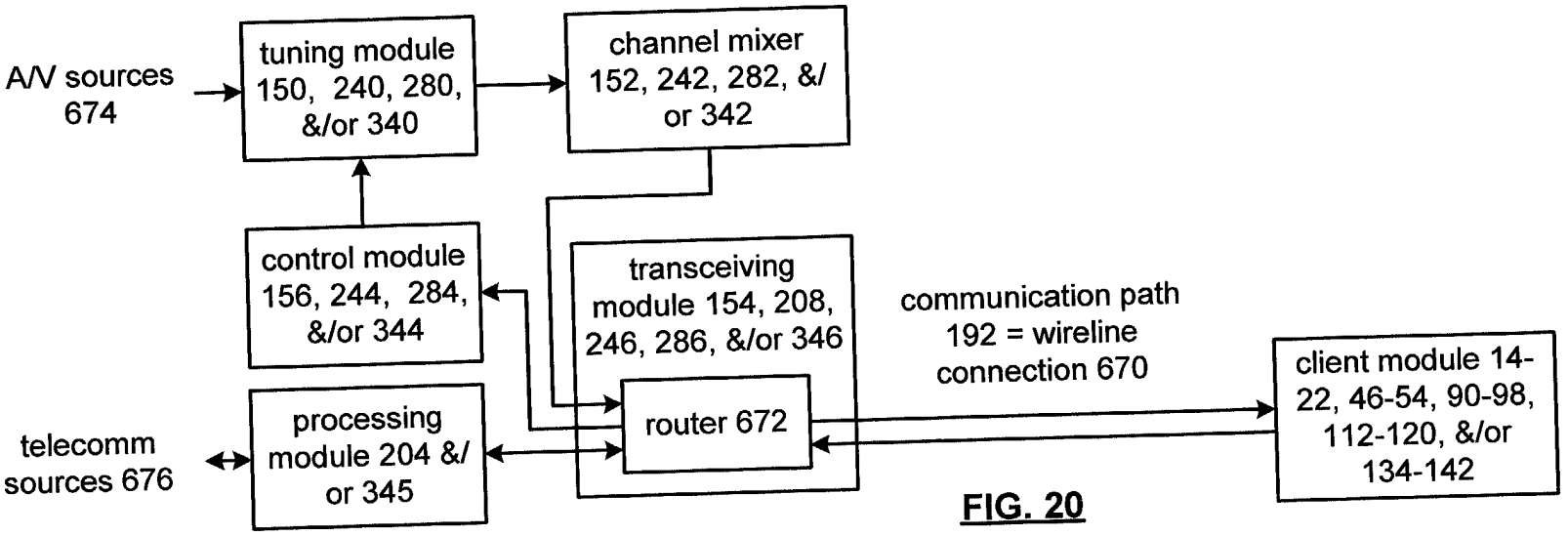

A/V sources 674
tuning module 150, 240, 280, &/or 340
channel mixer 152, 242, 282, &/ or 342
control module 156, 244, 284, &/or 344
transceiving module 154, 208, 246, 286, &/or 346
router 672
communication path 192 = wireline connection 670
client module 14-22, 46-54, 90-98, 112-120, &/or 134-142
telecomm sources 676
processing module 204 &/ or 345

FIG. 20

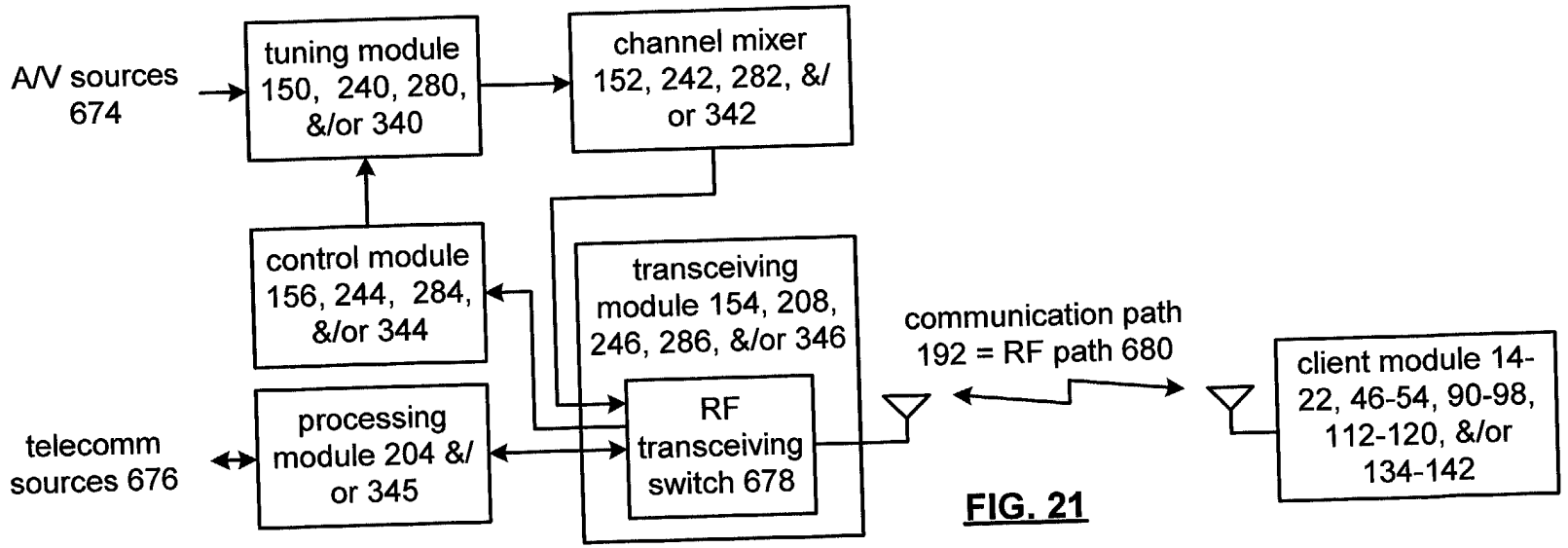

A/V sources 674
tuning module 150, 240, 280, &/or 340
channel mixer 152, 242, 282, &/ or 342
control module 156, 244, 284, &/or 344
transceiving module 154, 208, 246, 286, &/or 346
RF transceiving switch 678
communication path 192 = RF path 680
client module 14-22, 46-54, 90-98, 112-120, &/or 134-142
telecomm sources 676
processing module 204 &/ or 345

FIG. 21

TOTES0' E8Z6990

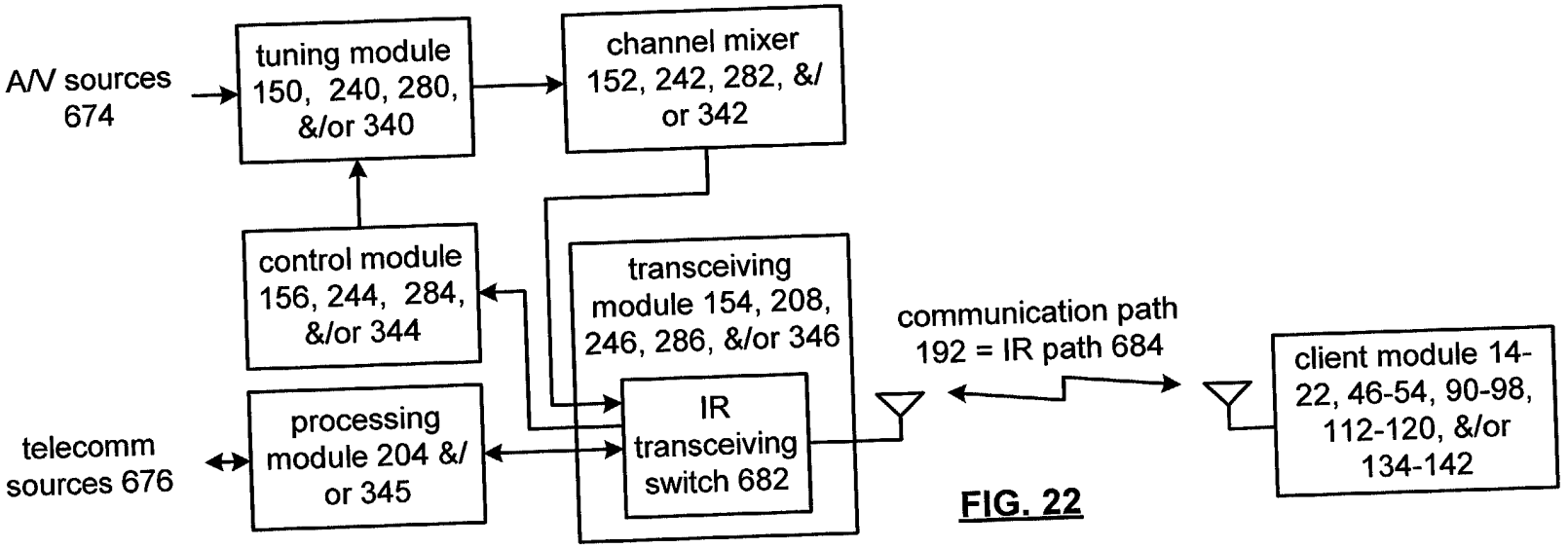


FIG. 22

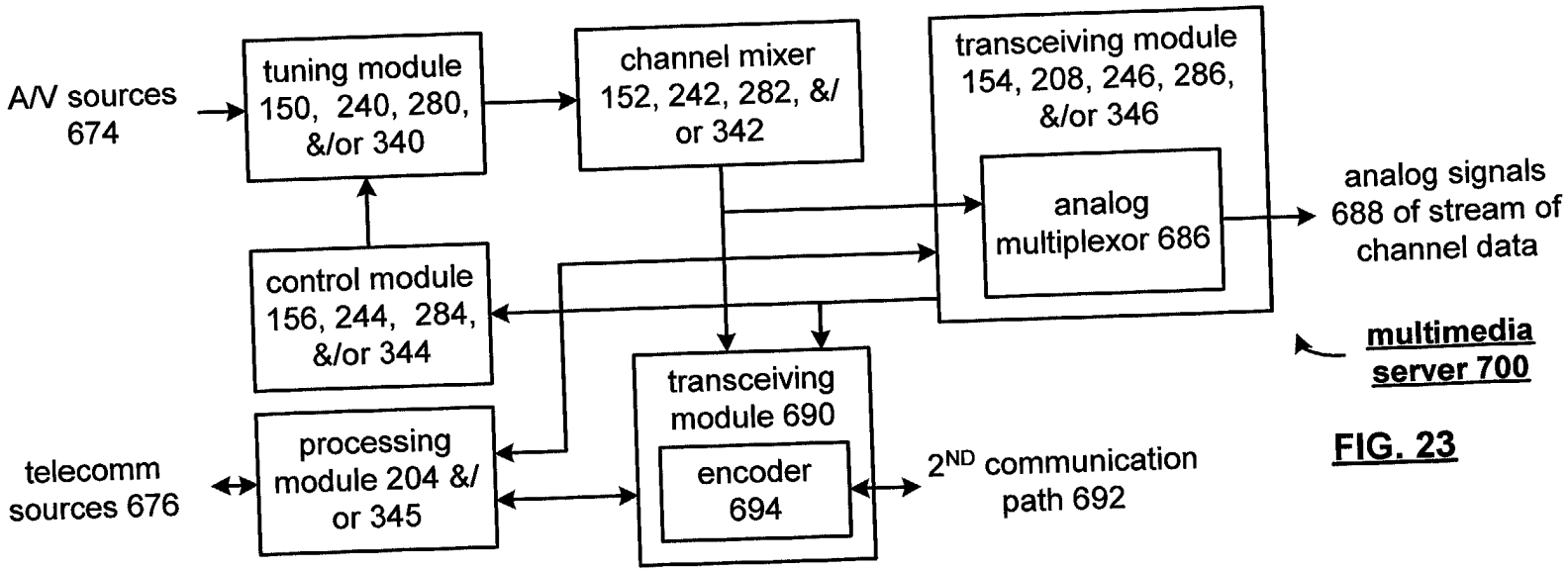


FIG. 23

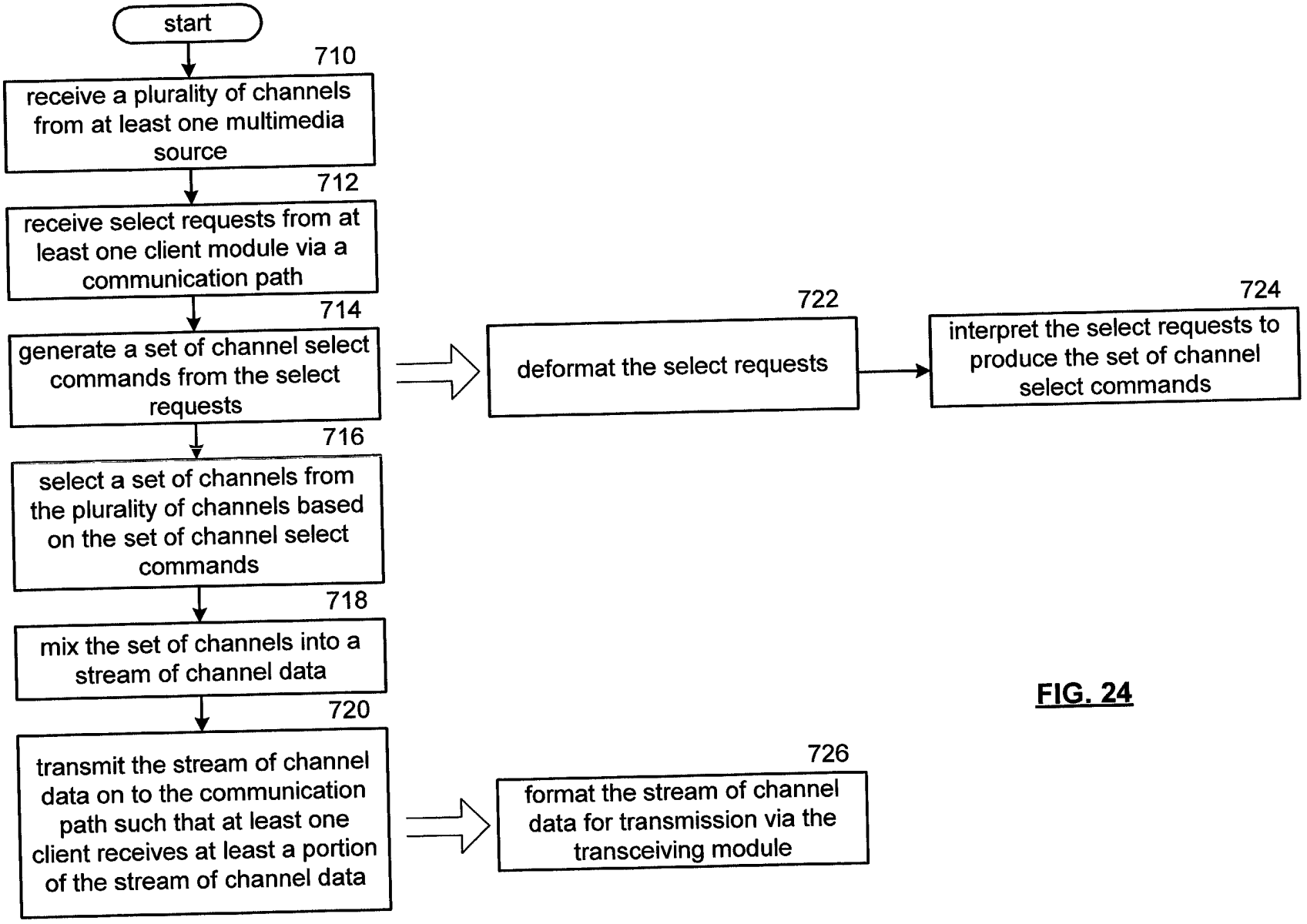

start
710
receive a plurality of channels from at least one multimedia source
712
receive select requests from at least one client module via a communication path
714
generate a set of channel select commands from the select requests
722
deformat the select requests
724
interpret the select requests to produce the set of channel select commands
716
select a set of channels from the plurality of channels based on the set of channel select commands
718
mix the set of channels into a stream of channel data
720
transmit the stream of channel data on to the communication path such that at least one client receives at least a portion of the stream of channel data
726
format the stream of channel data for transmission via the transceiving module

FIG. 24

Tomeso Exhibit

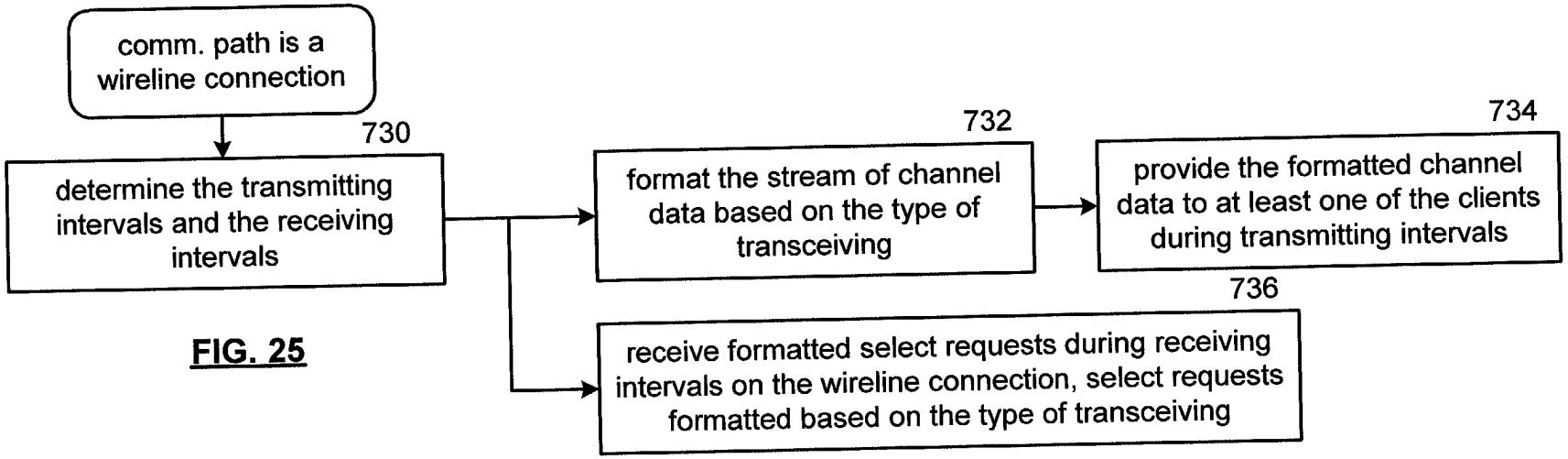


FIG. 25

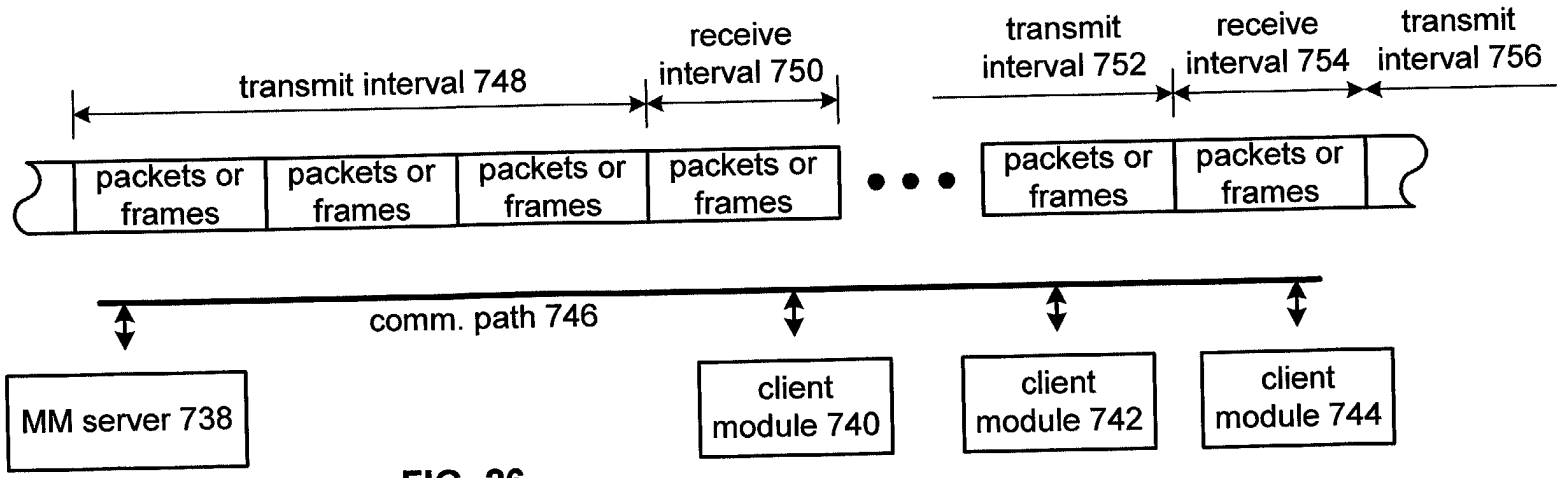


FIG. 26

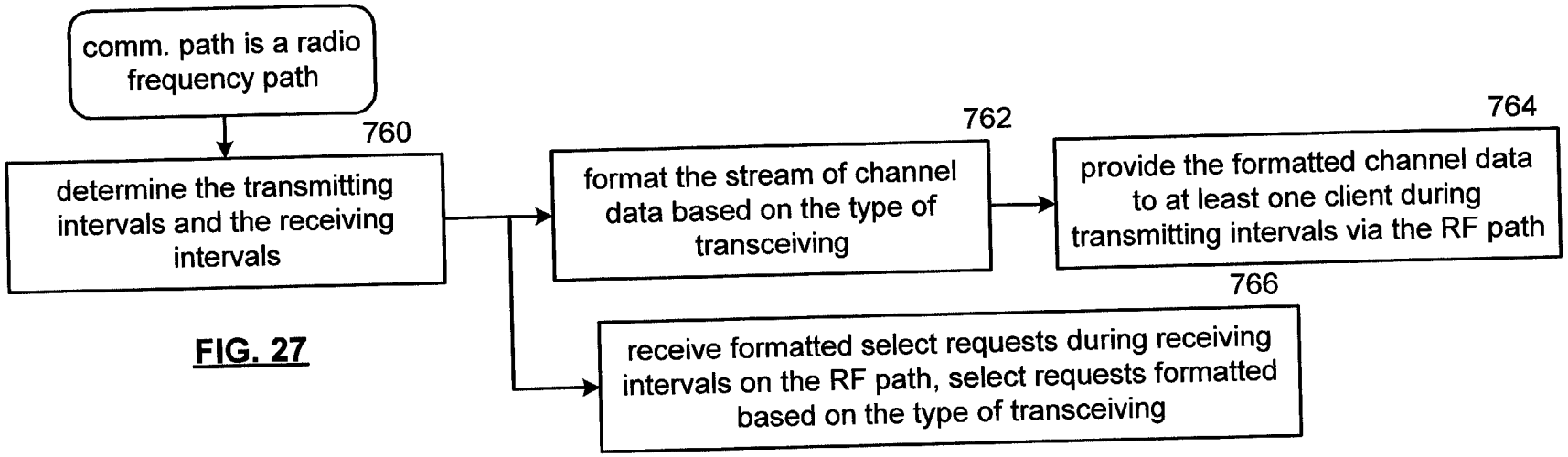

comm. path is a radio frequency path
760
determine the transmitting intervals and the receiving intervals
762
format the stream of channel data based on the type of transceiving
764
provide the formatted channel data to at least one client during transmitting intervals via the RF path
766
receive formatted select requests during receiving intervals on the RF path, select requests formatted based on the type of transceiving

FIG. 27

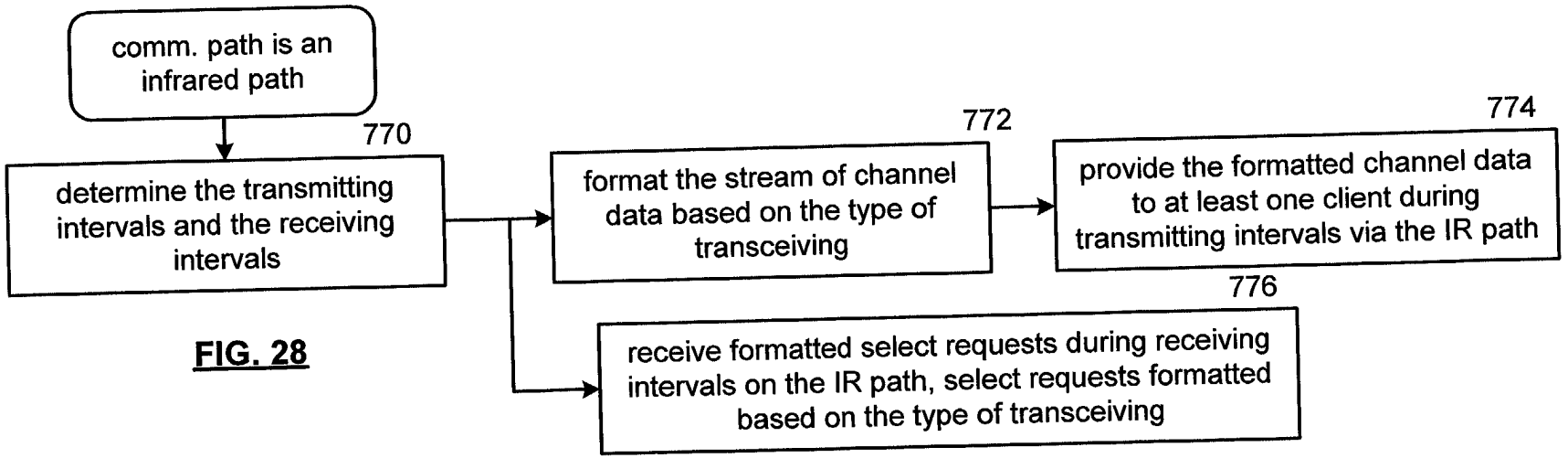

comm. path is an infrared path
770
determine the transmitting intervals and the receiving intervals
772
format the stream of channel data based on the type of transceiving
774
provide the formatted channel data to at least one client during transmitting intervals via the IR path
776
receive formatted select requests during receiving intervals on the IR path, select requests formatted based on the type of transceiving

FIG. 28

TOM250 E0279860

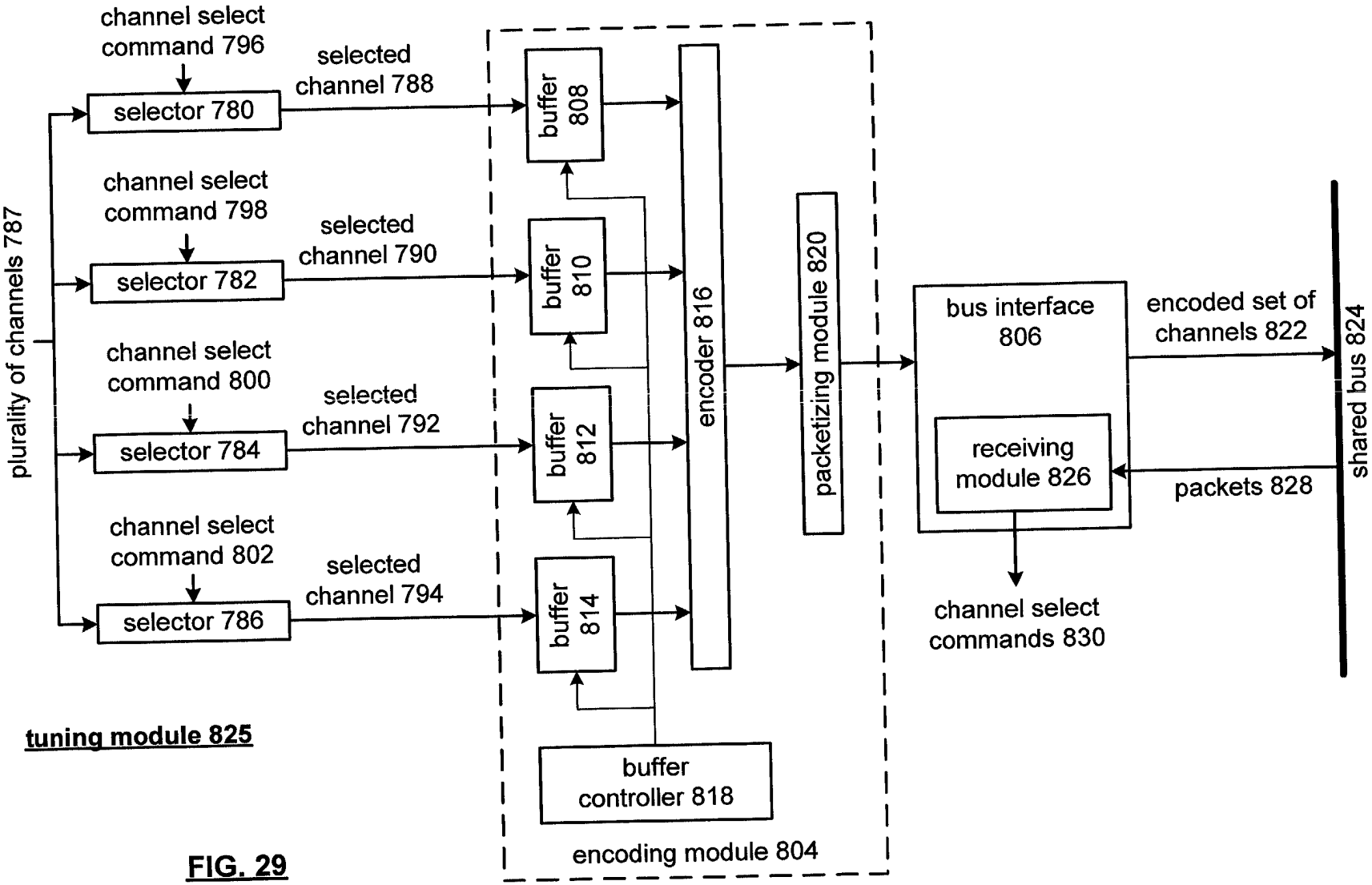


FIG. 29

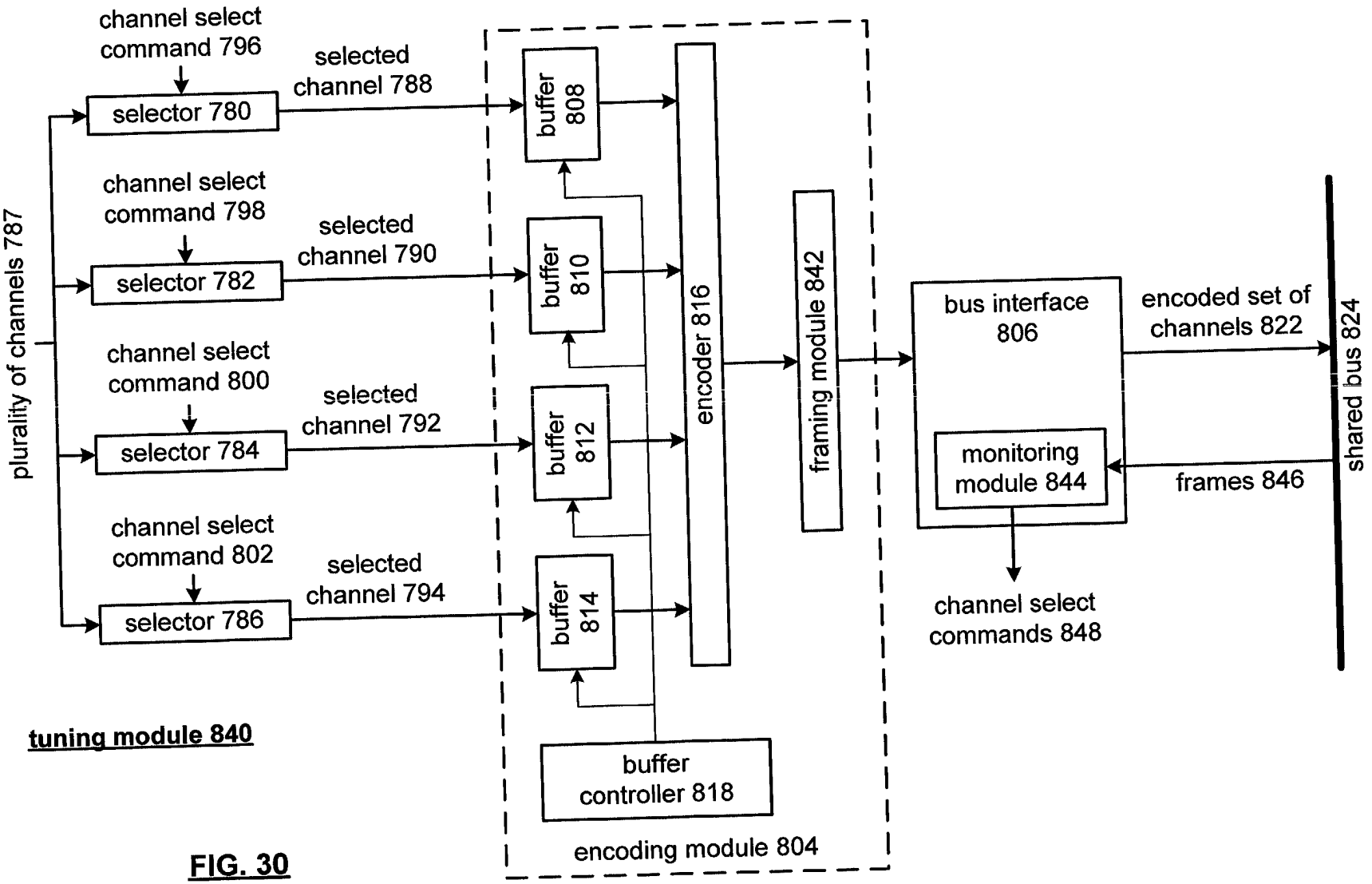

channel select command 796
selector 780
selected channel 788
buffer 808
channel select command 798
selector 782
selected channel 790
buffer 810
channel select command 800
selector 784
selected channel 792
buffer 812
channel select command 802
selector 786
selected channel 794
buffer 814
plurality of channels 787
encoder 816
framing module 842
bus interface 806
encoded set of channels 822
shared bus 824
monitoring module 844
frames 846
channel select commands 848
buffer controller 818
encoding module 804
tuning module 840

FIG. 30

Tomtom Ex. 1009

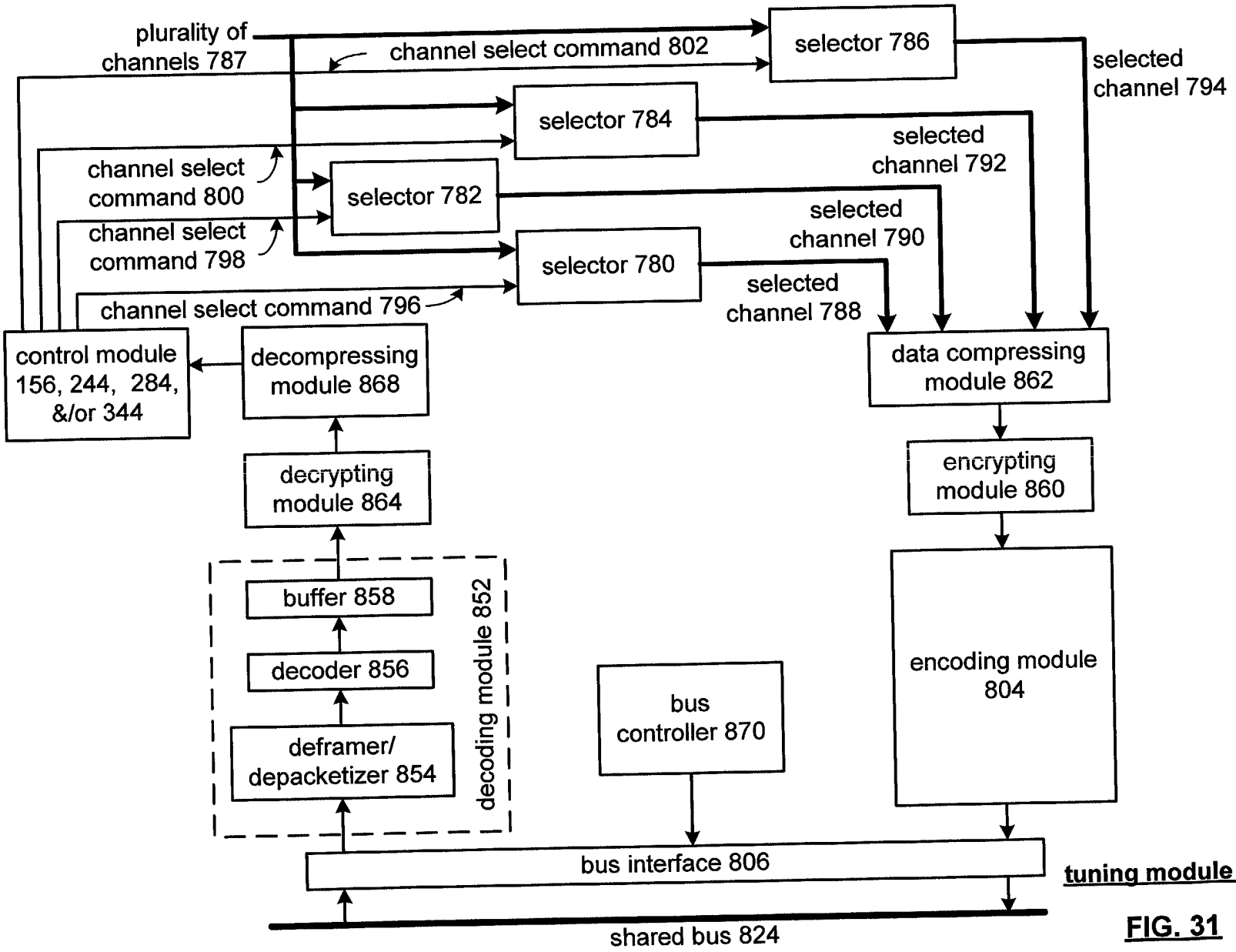


FIG. 31

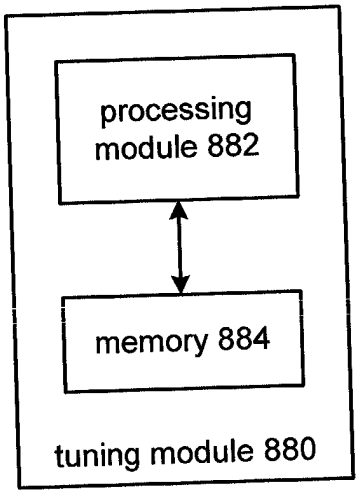


FIG. 32

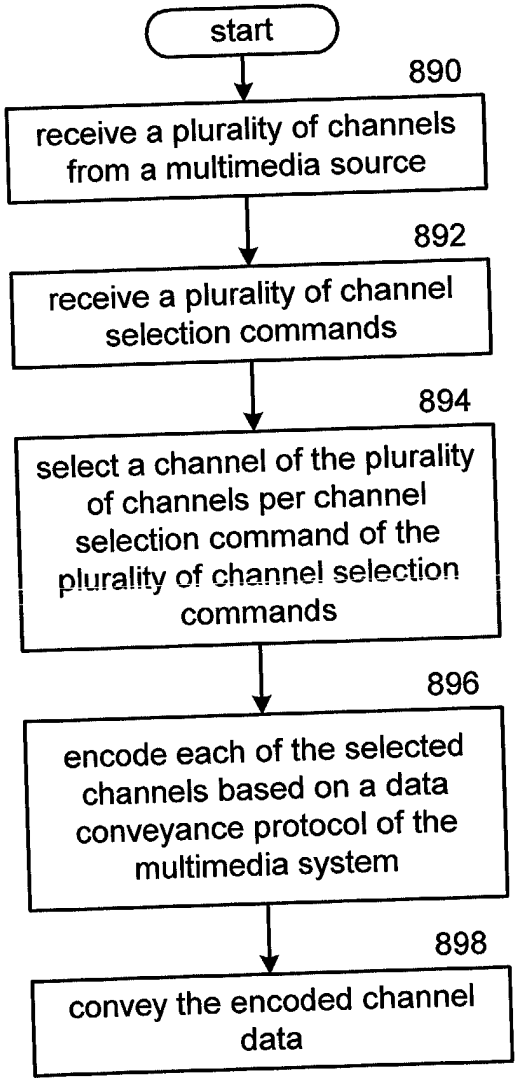


FIG. 33

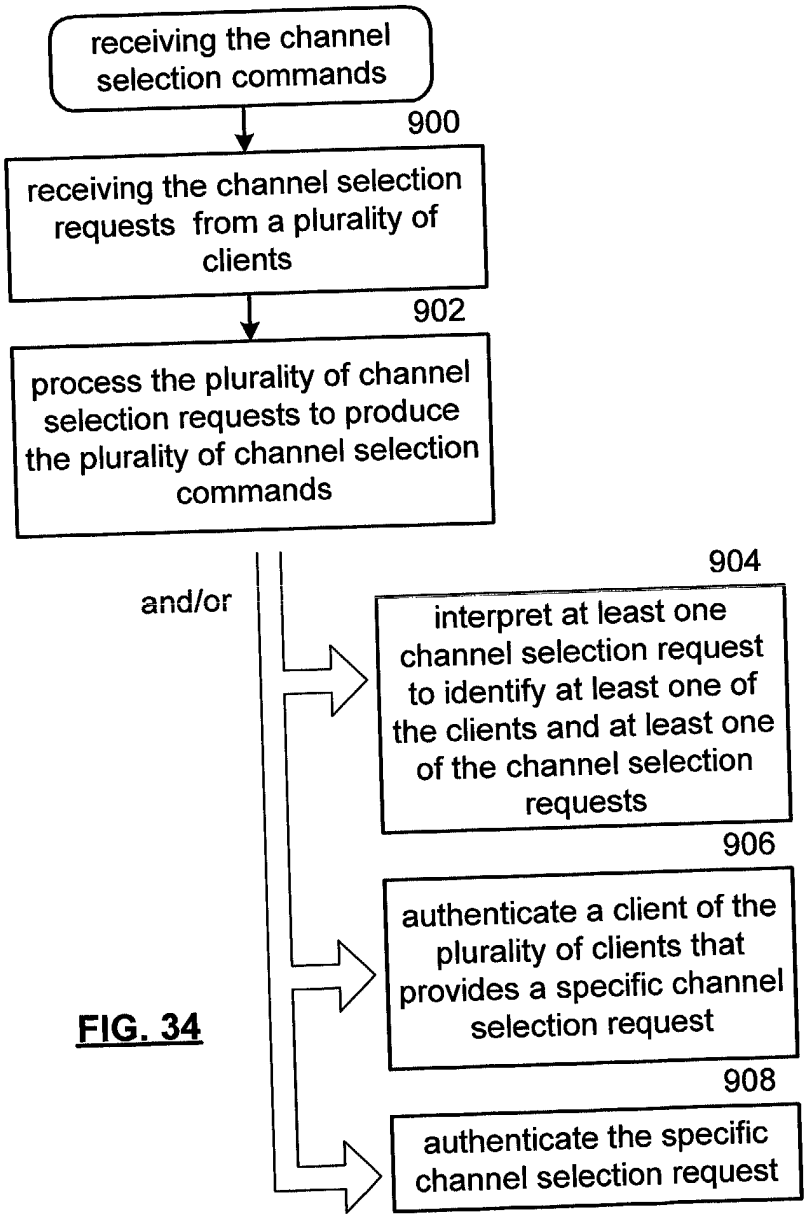


FIG. 34

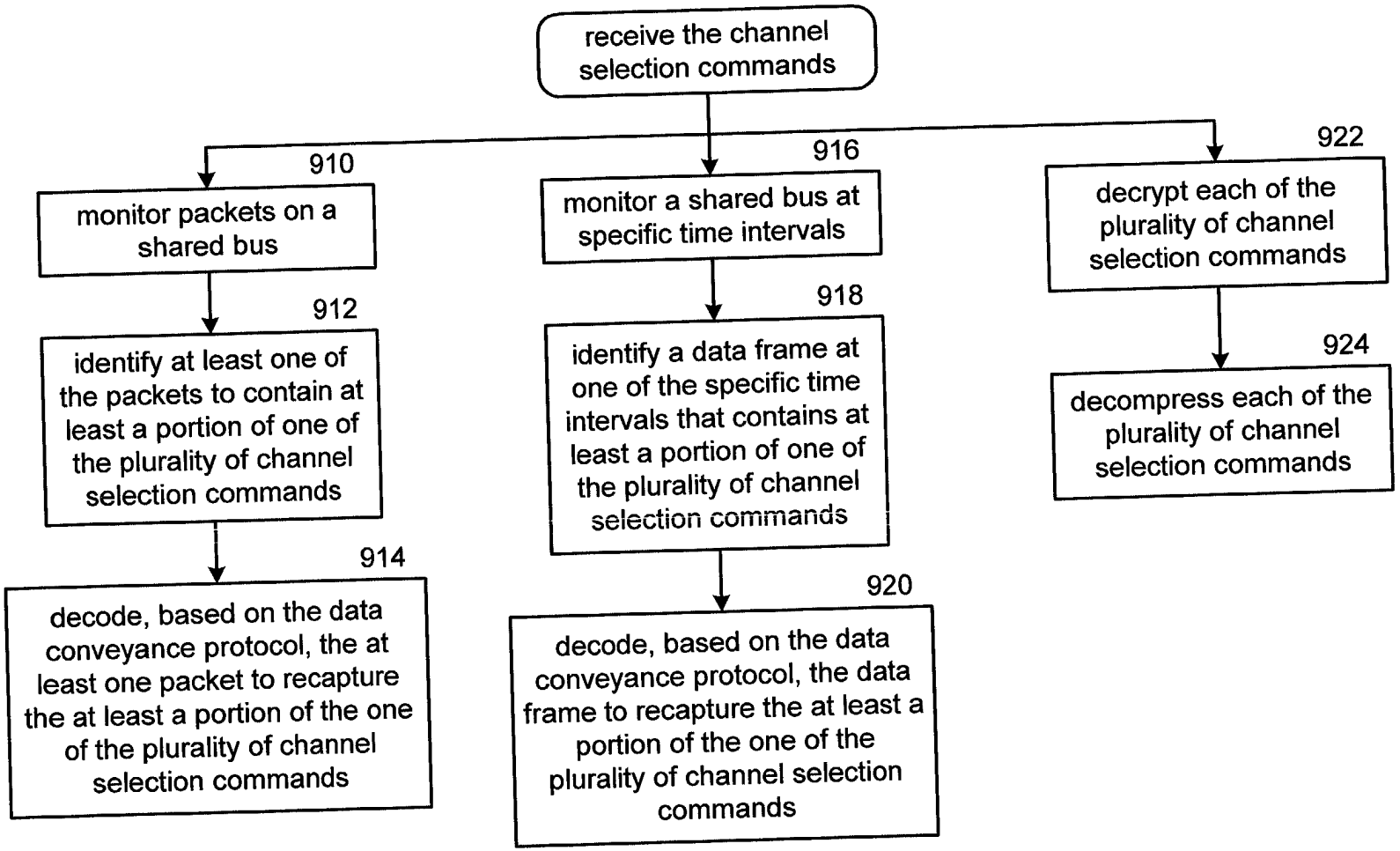

receive the channel selection commands
910
monitor packets on a shared bus
912
identify at least one of the packets to contain at least a portion of one of the plurality of channel selection commands
914
decode, based on the data conveyance protocol, the at least one packet to recapture the at least a portion of the one of the plurality of channel selection commands
916
monitor a shared bus at specific time intervals
918
identify a data frame at one of the specific time intervals that contains at least a portion of one of the plurality of channel selection commands
920
decode, based on the data conveyance protocol, the data frame to recapture the at least a portion of the one of the plurality of channel selection commands
922
decrypt each of the plurality of channel selection commands
924
decompress each of the plurality of channel selection commands

FIG. 35

TOSHIBA EXHIBIT 1008

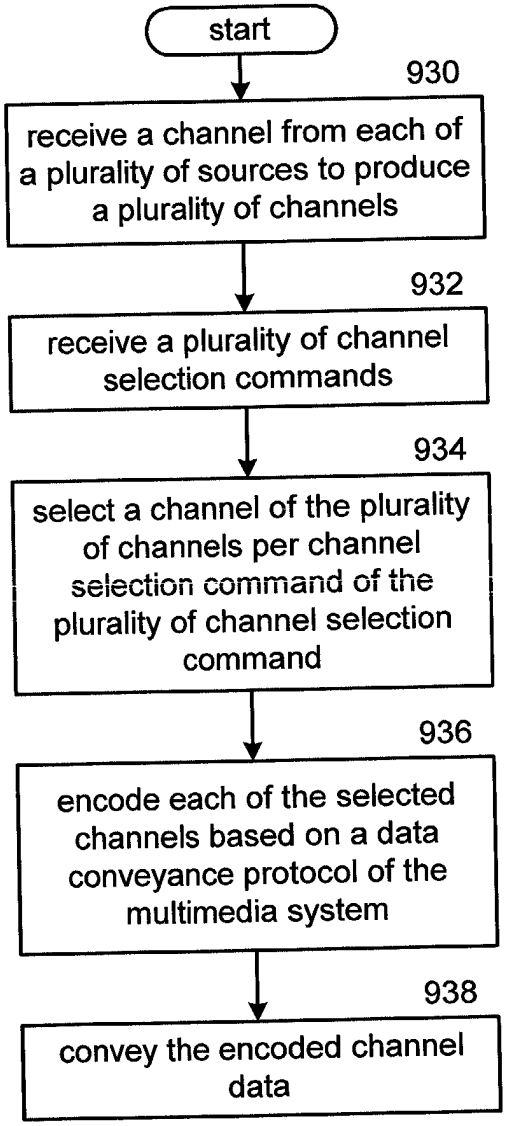


FIG. 36

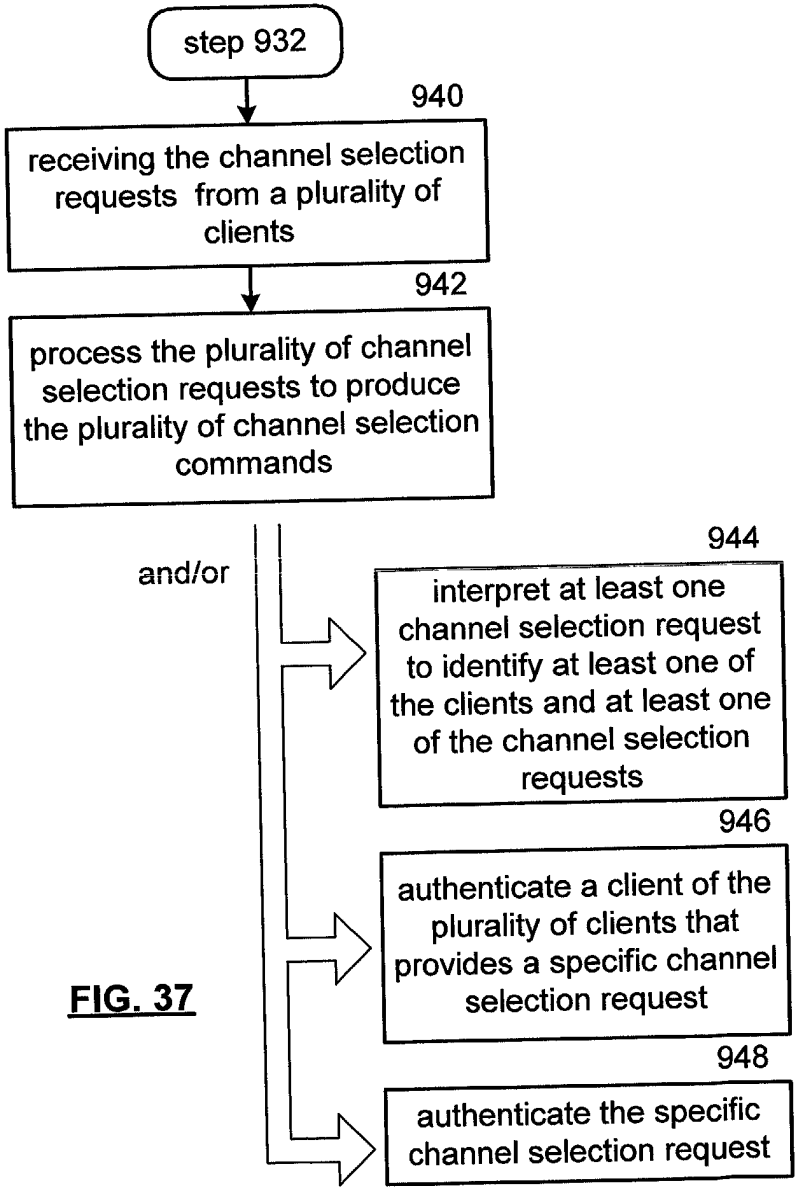


FIG. 37

TOREGO EXHIBIT

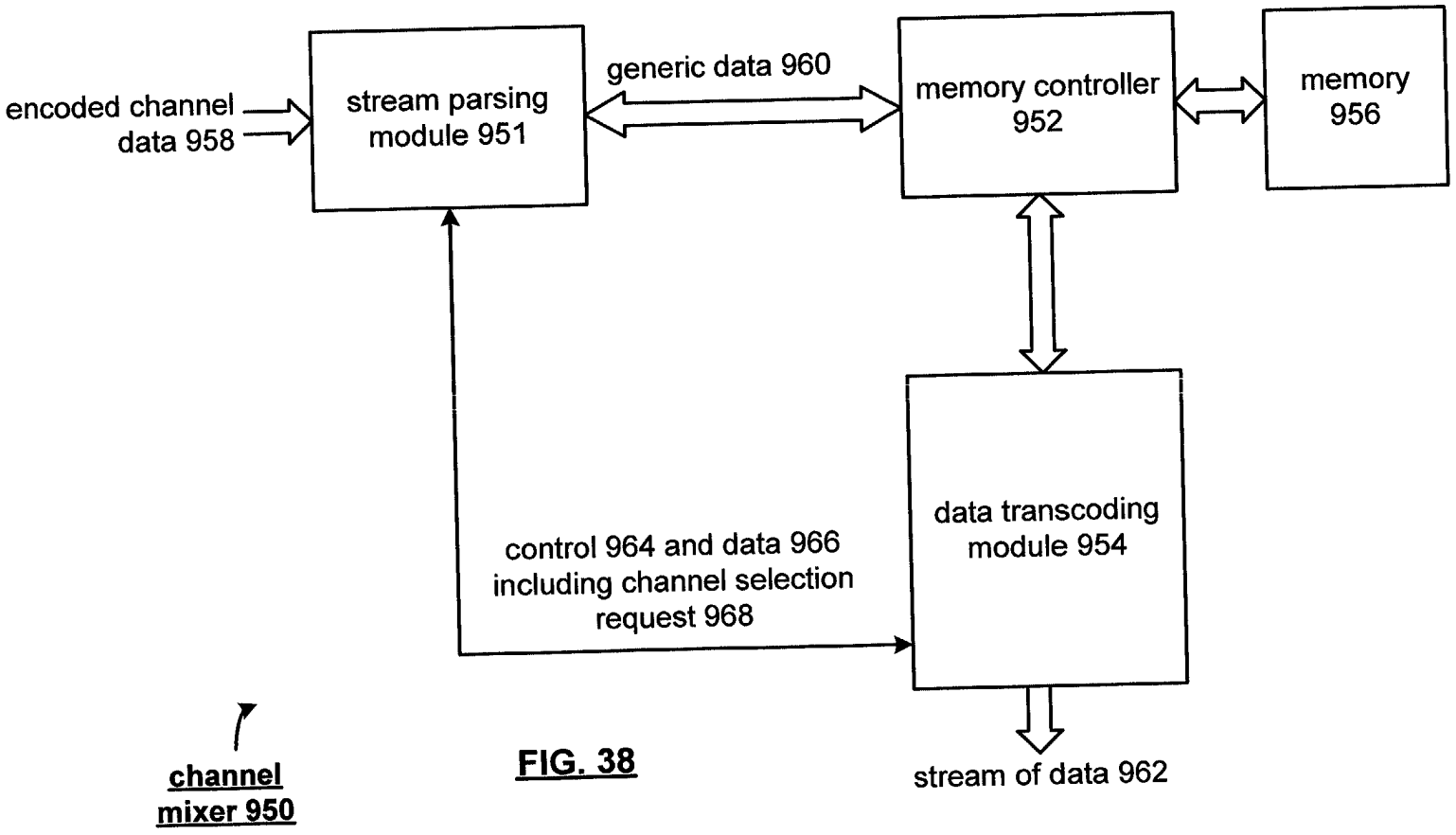


FIG. 38

TOMSO EXHIBIT

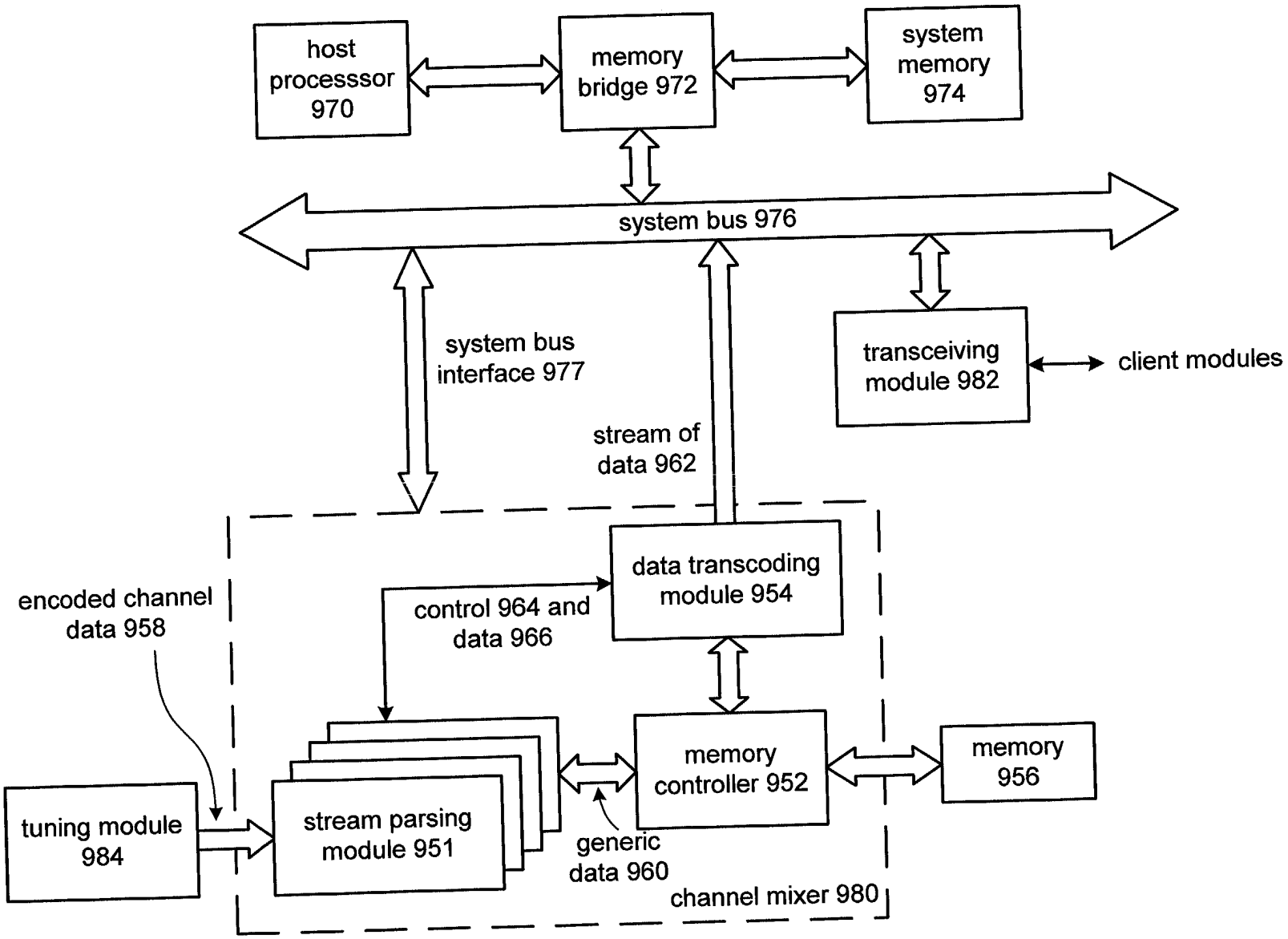
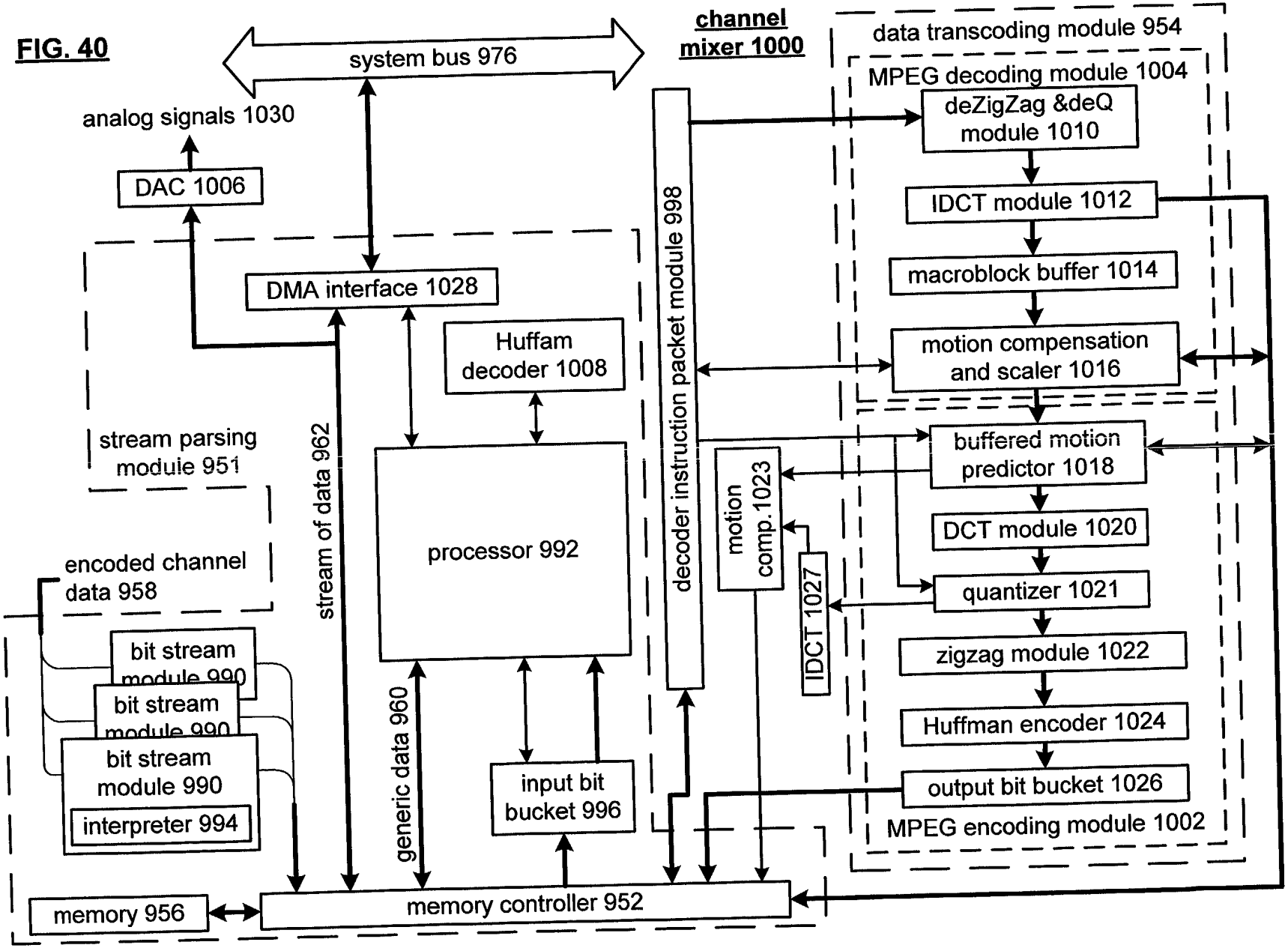


FIG. 39

FIG. 40


system bus 976
channel mixer 1000
data transcoding module 954
MPEG decoding module 1004
deZigZag &deQ module 1010
IDCT module 1012
macroblock buffer 1014
motion compensation and scaler 1016
buffered motion predictor 1018
DCT module 1020
quantizer 1021
zigzag module 1022
Huffman encoder 1024
output bit bucket 1026
MPEG encoding module 1002
analog signals 1030
DAC 1006
DMA interface 1028
Huffam decoder 1008
stream parsing module 951
stream of data 962
processor 992
decoder instruction packet module 998
motion comp.1023
IDCT 1027
encoded channel data 958
bit stream module 990
bit stream module 990
bit stream module 990
interpreter 994
generic data 960
input bit bucket 996
memory 956
memory controller 952

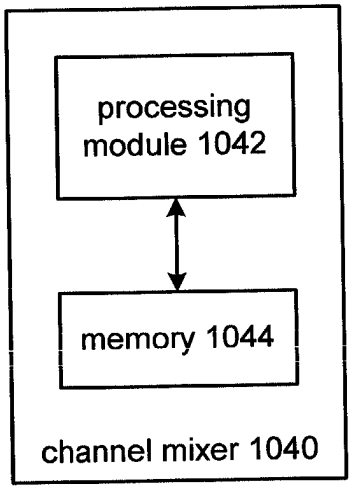

processing module 1042
memory 1044
channel mixer 1040

FIG. 41

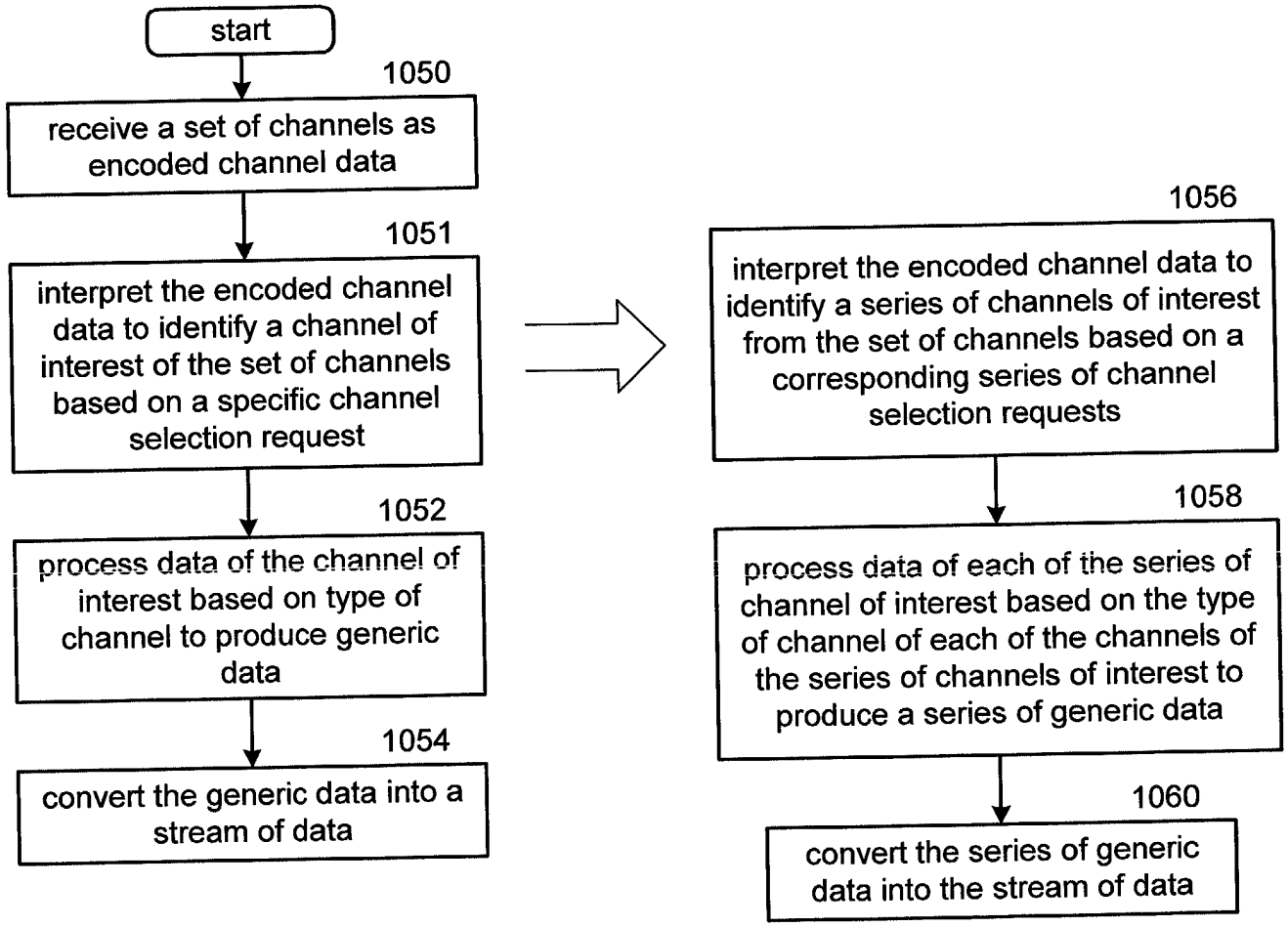

start
1050
receive a set of channels as encoded channel data
1051
interpret the encoded channel data to identify a channel of interest of the set of channels based on a specific channel selection request
1052
process data of the channel of interest based on type of channel to produce generic data
1054
convert the generic data into a stream of data
1056
interpret the encoded channel data to identify a series of channels of interest from the set of channels based on a corresponding series of channel selection requests
1058
process data of each of the series of channel of interest based on the type of channel of each of the channels of the series of channels of interest to produce a series of generic data
1060
convert the series of generic data into the stream of data

FIG. 42

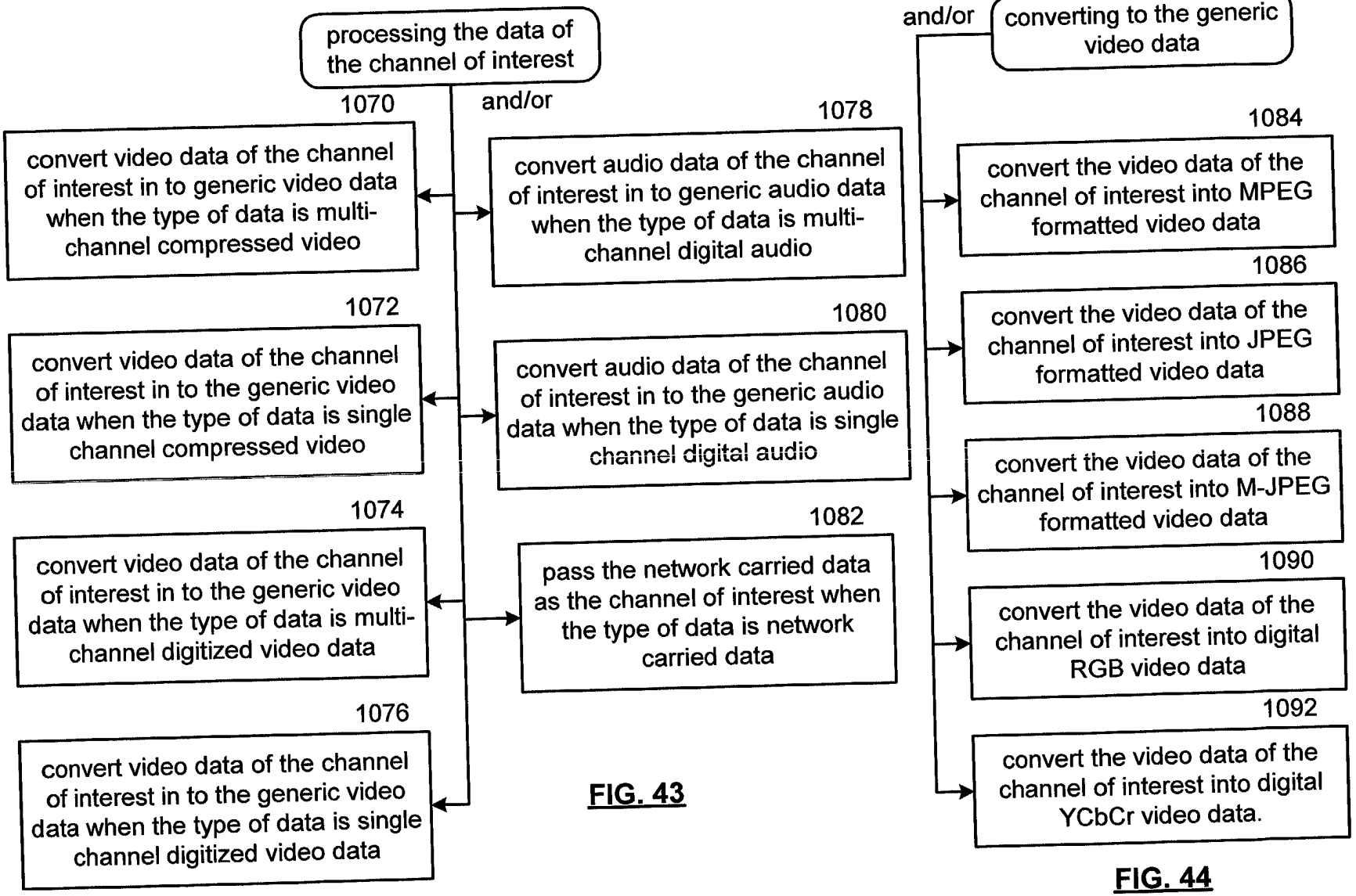

processing the data of the channel of interest
1070
convert video data of the channel of interest in to generic video data when the type of data is multi-channel compressed video
1072
convert video data of the channel of interest in to the generic video data when the type of data is single channel compressed video
1074
convert video data of the channel of interest in to the generic video data when the type of data is multi-channel digitized video data
1076
convert video data of the channel of interest in to the generic video data when the type of data is single channel digitized video data
and/or
1078
convert audio data of the channel of interest in to generic audio data when the type of data is multi-channel digital audio
1080
convert audio data of the channel of interest in to the generic audio data when the type of data is single channel digital audio
1082
pass the network carried data as the channel of interest when the type of data is network carried data
and/or
converting to the generic video data
1084
convert the video data of the channel of interest into MPEG formatted video data
1086
convert the video data of the channel of interest into JPEG formatted video data
1088
convert the video data of the channel of interest into M-JPEG formatted video data
1090
convert the video data of the channel of interest into digital RGB video data
1092
convert the video data of the channel of interest into digital YCbCr video data.

FIG. 43

FIG. 44

Patent Application

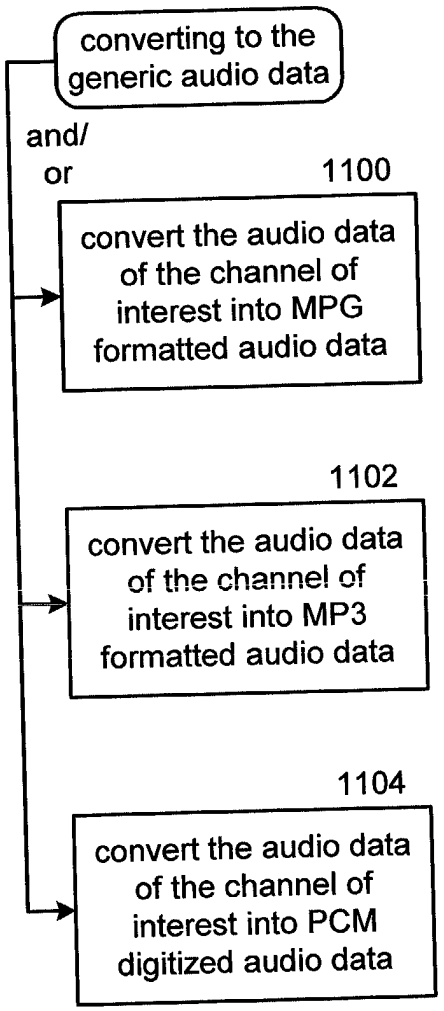


FIG. 45

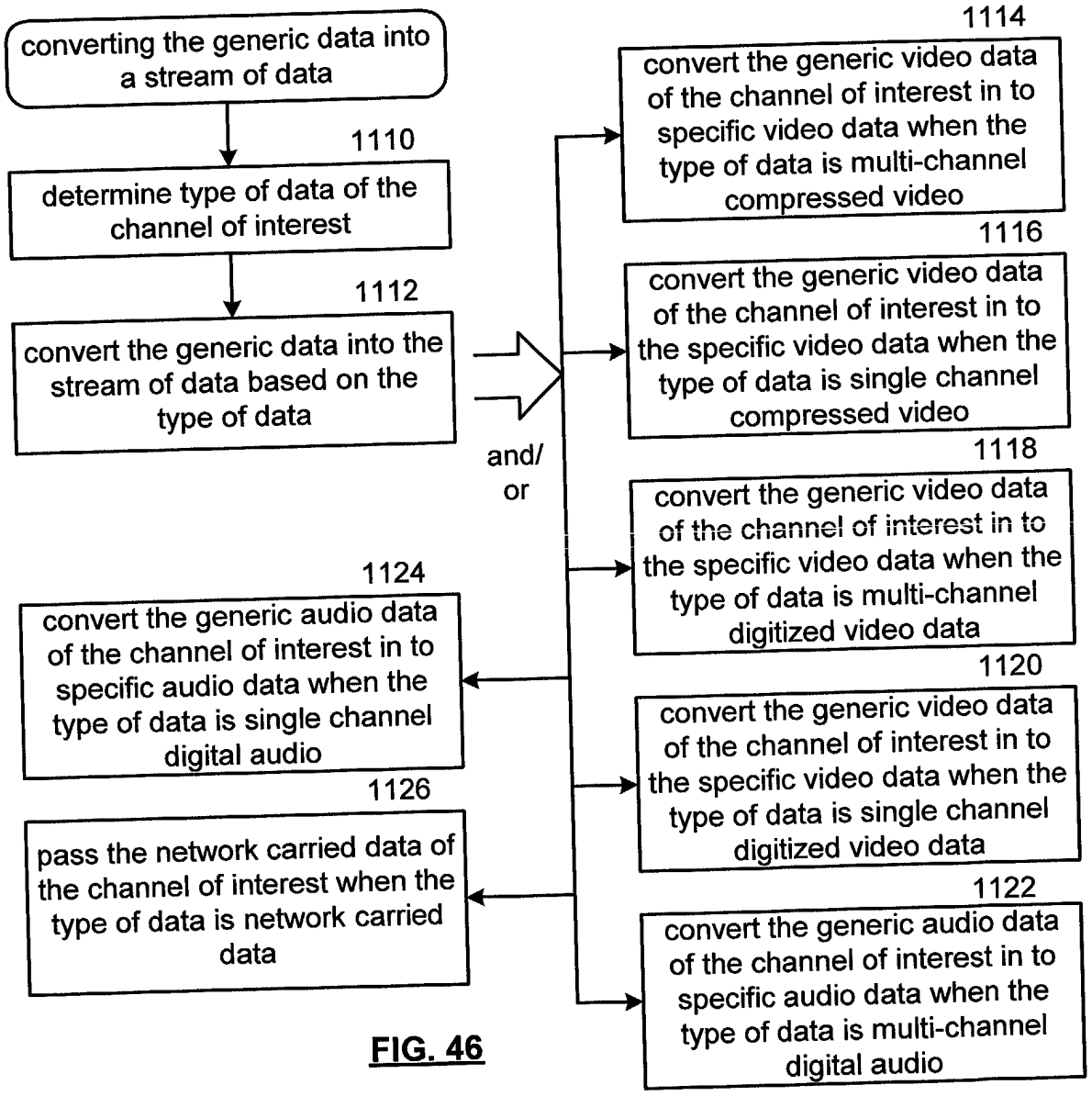


FIG. 46

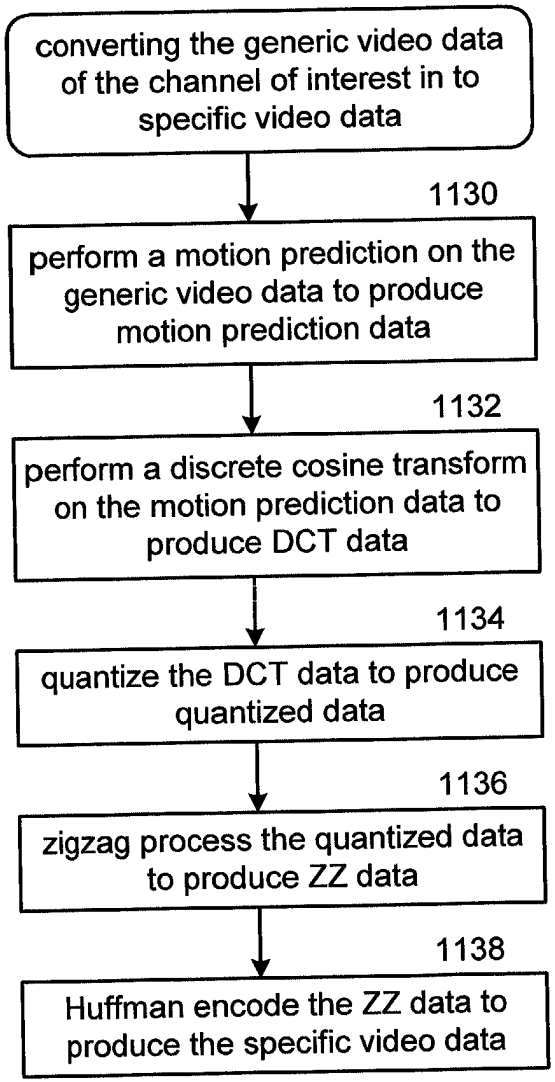

converting the generic video data of the channel of interest in to specific video data
1130
perform a motion prediction on the generic video data to produce motion prediction data
1132
perform a discrete cosine transform on the motion prediction data to produce DCT data
1134
quantize the DCT data to produce quantized data
1136
zigzag process the quantized data to produce ZZ data
1138
Huffman encode the ZZ data to produce the specific video data

FIG. 47

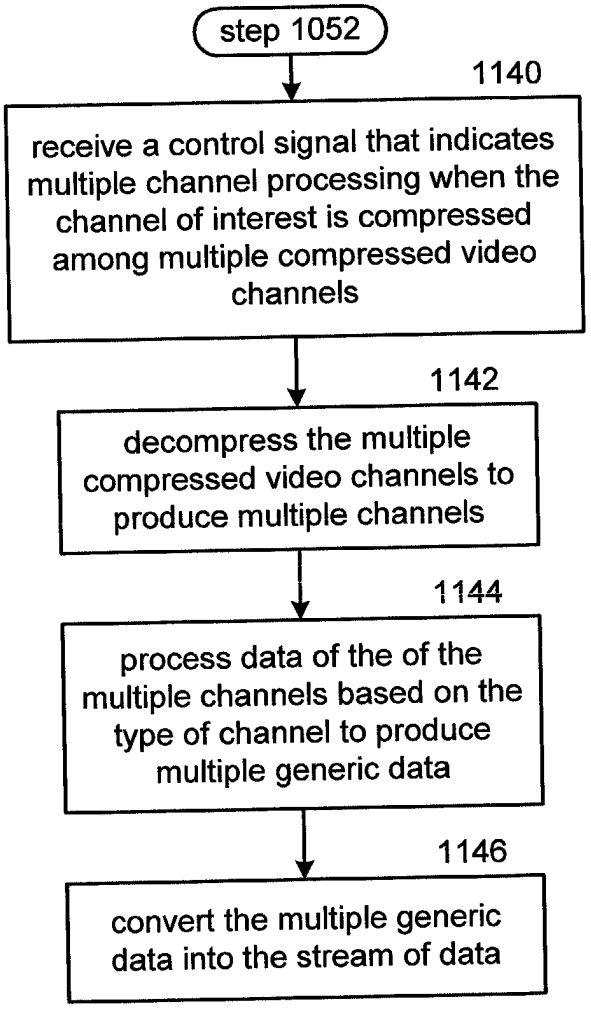

step 1052
1140
receive a control signal that indicates multiple channel processing when the channel of interest is compressed among multiple compressed video channels
1142
decompress the multiple compressed video channels to produce multiple channels
1144
process data of the of the multiple channels based on the type of channel to produce multiple generic data
1146
convert the multiple generic data into the stream of data

FIG. 48

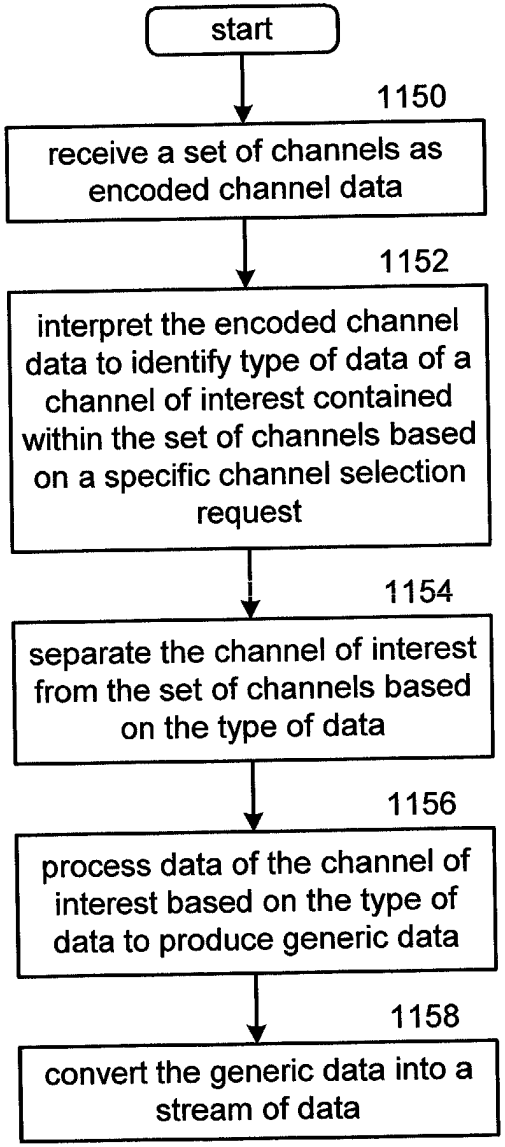

start
1150
receive a set of channels as encoded channel data
1152
interpret the encoded channel data to identify type of data of a channel of interest contained within the set of channels based on a specific channel selection request
1154
separate the channel of interest from the set of channels based on the type of data
1156
process data of the channel of interest based on the type of data to produce generic data
1158
convert the generic data into a stream of data

FIG. 49

TOMESO" C8245860

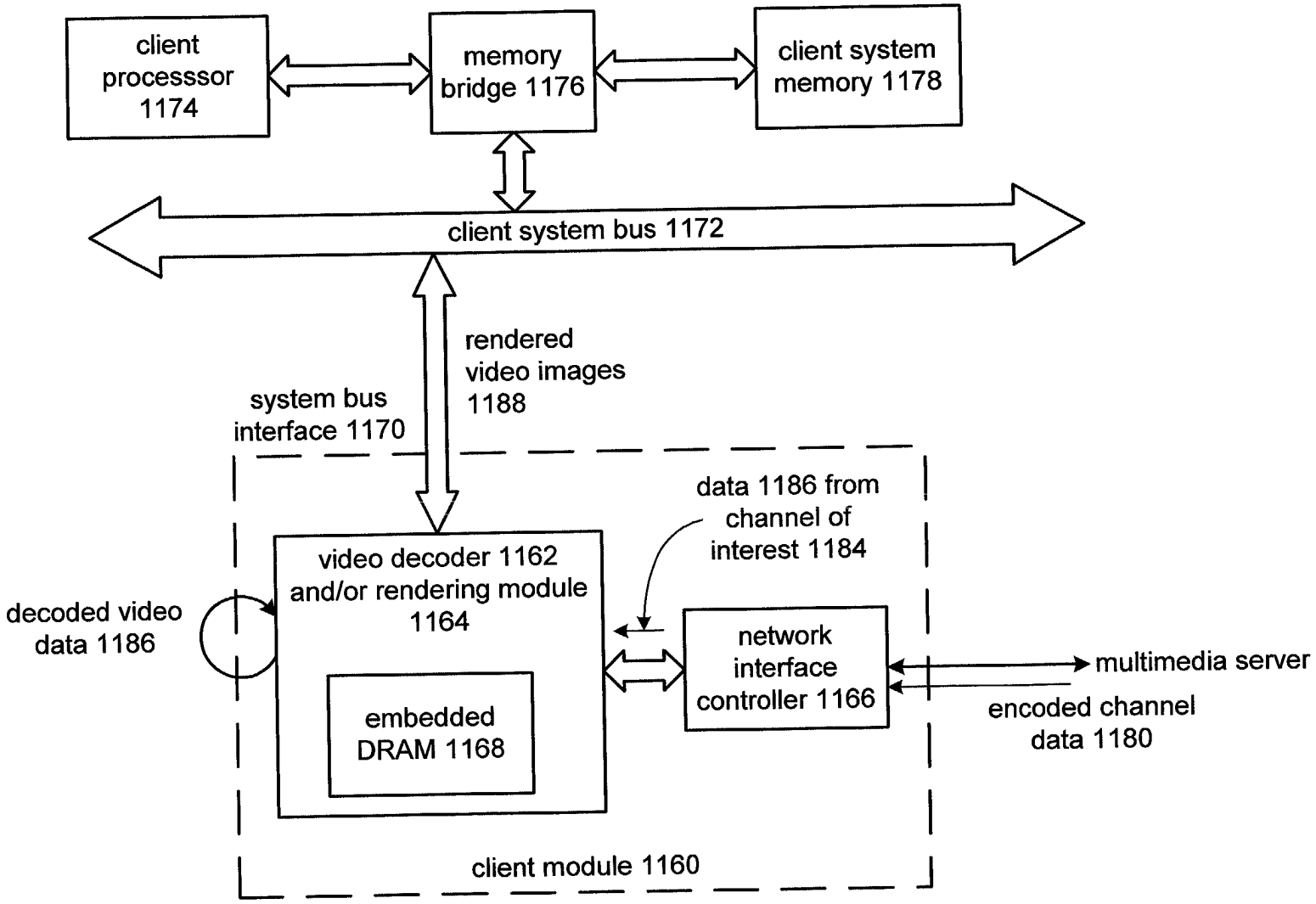


FIG. 50

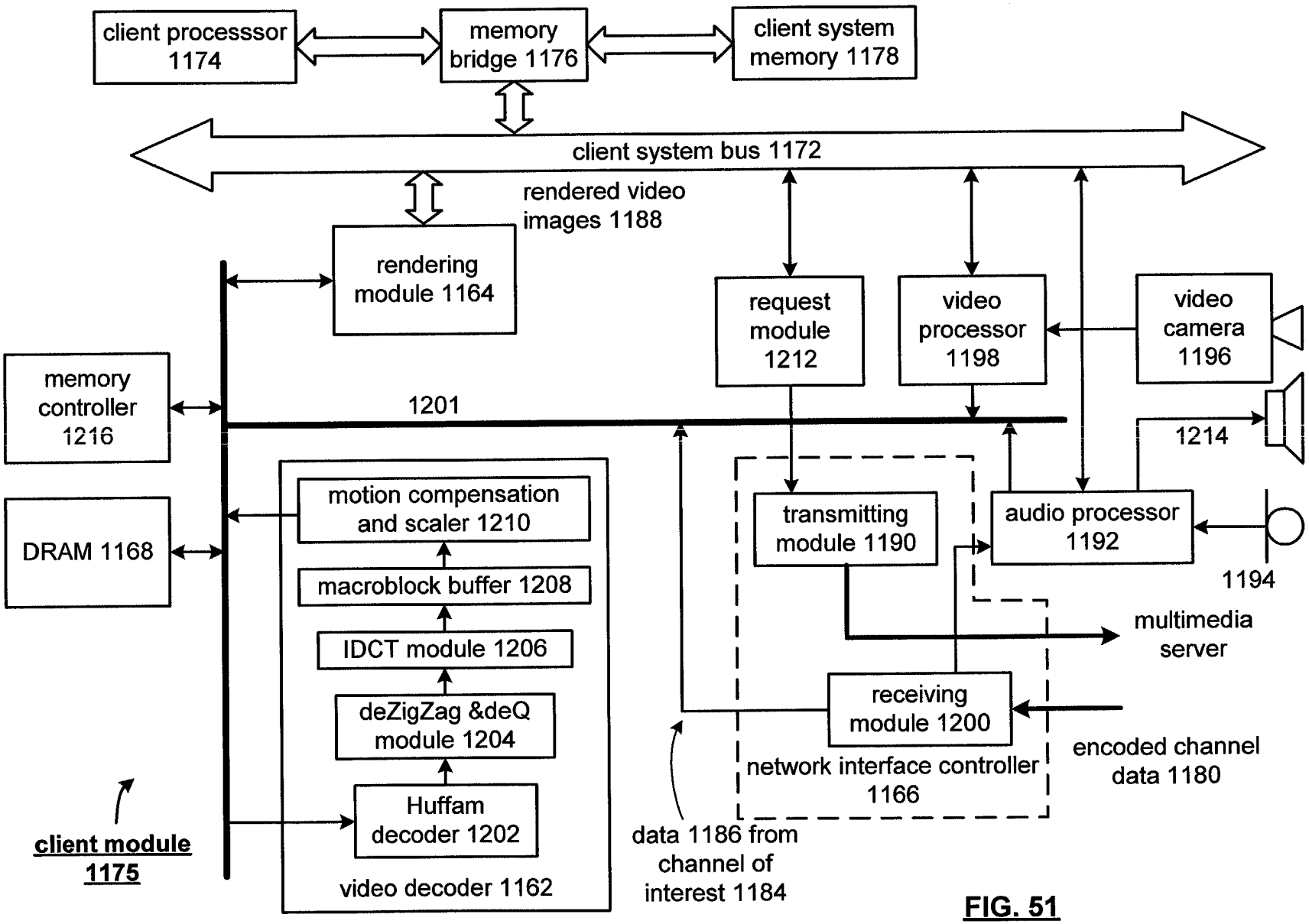

client processsor 1174
memory bridge 1176
client system memory 1178
client system bus 1172
rendered video images 1188
rendering module 1164
request module 1212
video processor 1198
video camera 1196
memory controller 1216
1201
1214
DRAM 1168
motion compensation and scaler 1210
macroblock buffer 1208
IDCT module 1206
deZigZag &deQ module 1204
Huffam decoder 1202
video decoder 1162
transmitting module 1190
audio processor 1192
1194
multimedia server
receiving module 1200
network interface controller 1166
encoded channel data 1180
client module 1175
data 1186 from channel of interest 1184

FIG. 51

FORESD" E0Z19860

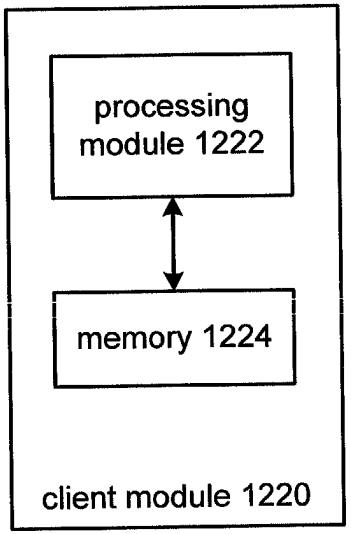


FIG. 52

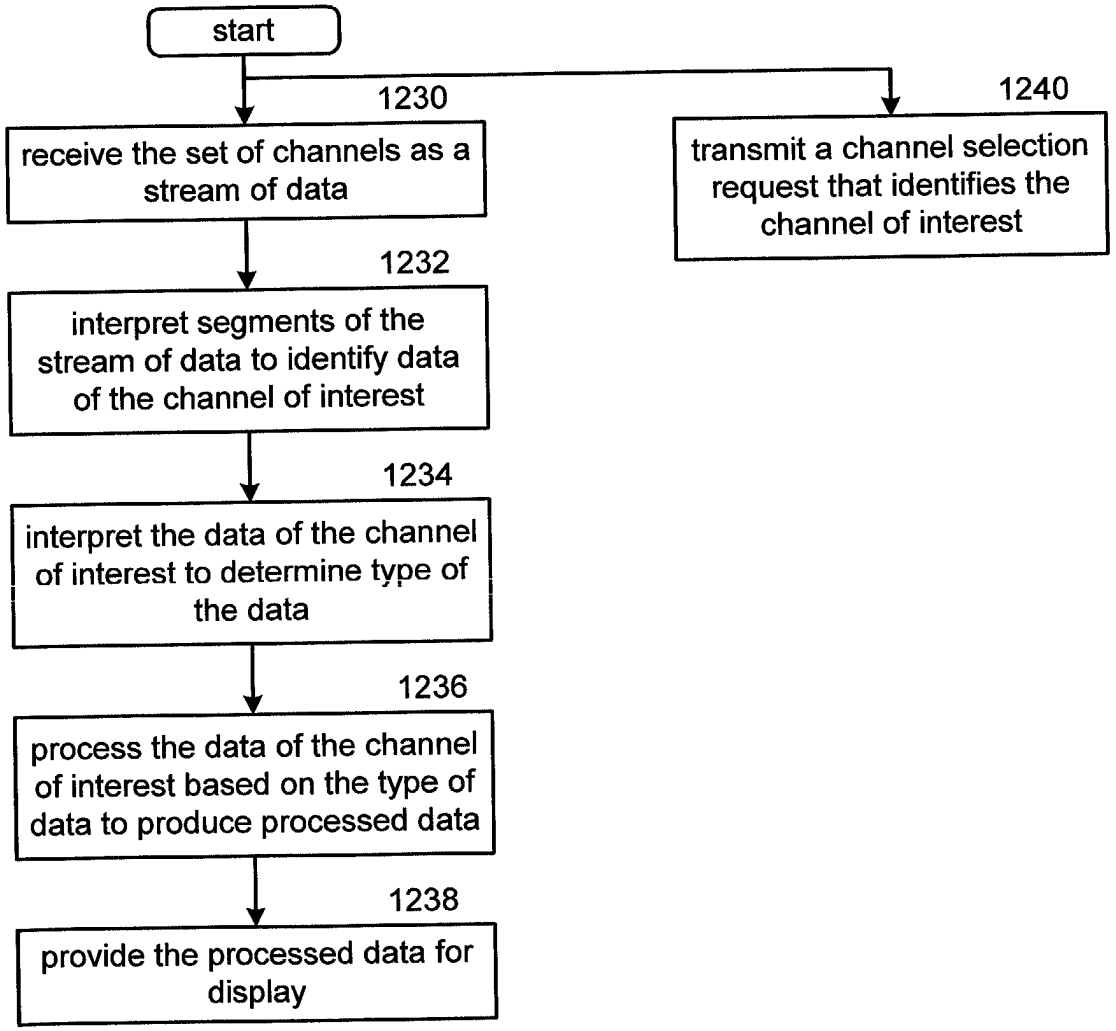


FIG. 53

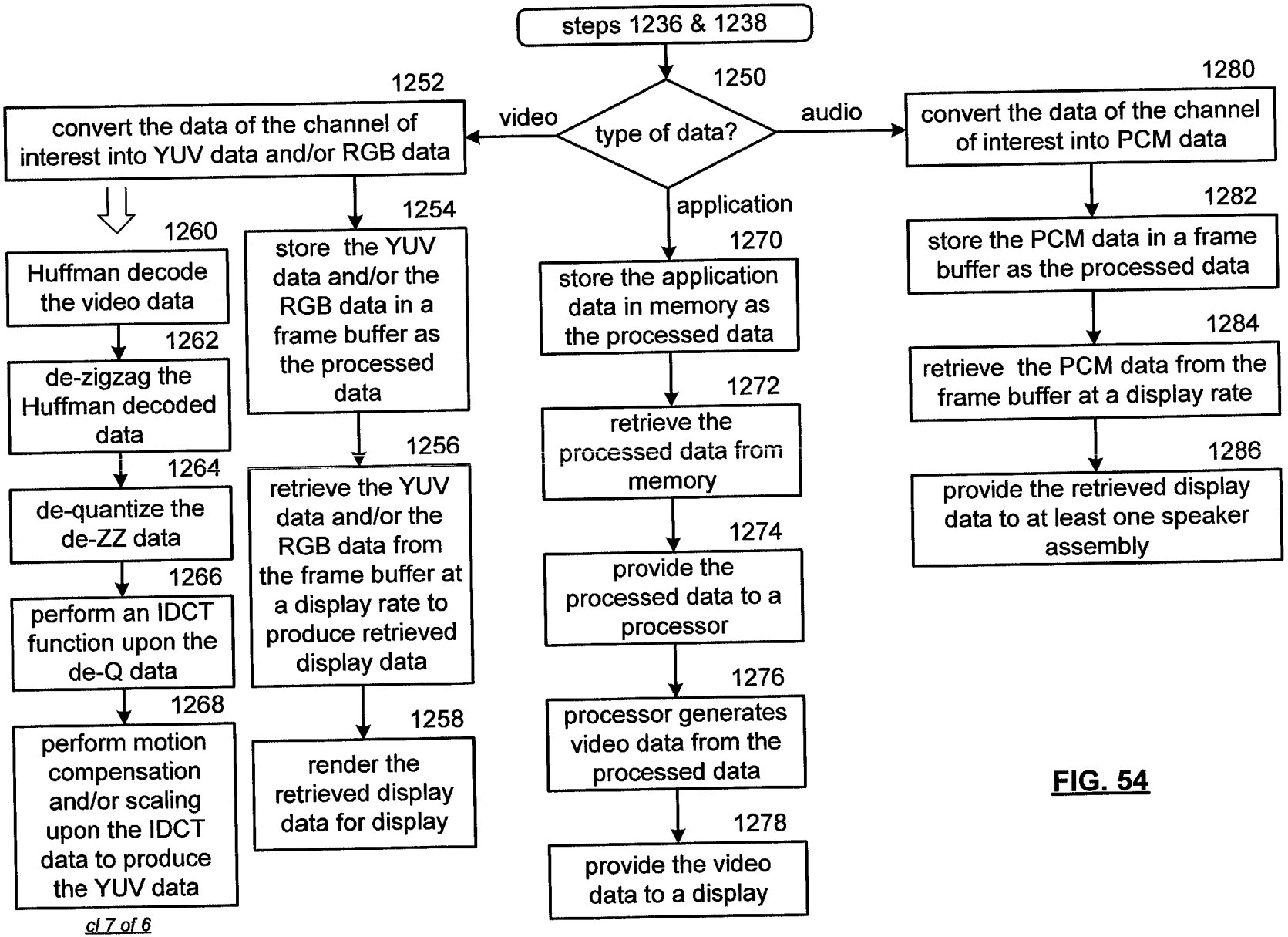

steps 1236 & 1238
1250
type of data?
video
audio
application
1252
convert the data of the channel of interest into YUV data and/or RGB data
1280
convert the data of the channel of interest into PCM data
1260
Huffman decode the video data
1262
de-zigzag the Huffman decoded data
1264
de-quantize the de-ZZ data
1266
perform an IDCT function upon the de-Q data
1268
perform motion compensation and/or scaling upon the IDCT data to produce the YUV data
1254
store the YUV data and/or the RGB data in a frame buffer as the processed data
1256
retrieve the YUV data and/or the RGB data from the frame buffer at a display rate to produce retrieved display data
1258
render the retrieved display data for display
1270
store the application data in memory as the processed data
1272
retrieve the processed data from memory
1274
provide the processed data to a processor
1276
processor generates video data from the processed data
1278
provide the video data to a display
1282
store the PCM data in a frame buffer as the processed data
1284
retrieve the PCM data from the frame buffer at a display rate
1286
provide the retrieved display data to at least one speaker assembly

FIG. 54

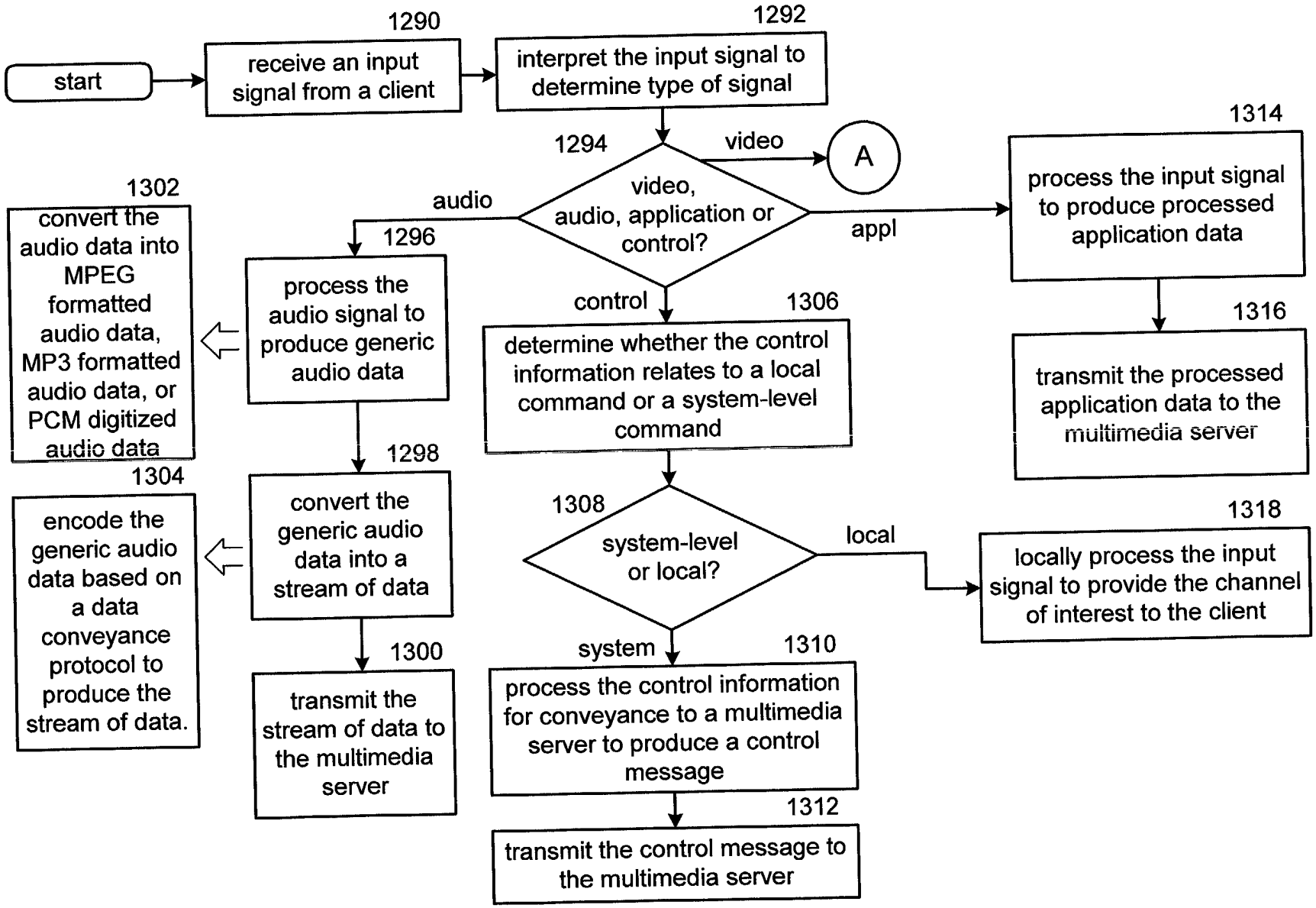

start
1290
receive an input signal from a client
1292
interpret the input signal to determine type of signal
1294
video, audio, application or control?
video
A
audio
appl
control
1296
process the audio signal to produce generic audio data
1298
convert the generic audio data into a stream of data
1300
transmit the stream of data to the multimedia server
1302
convert the audio data into MPEG formatted audio data, MP3 formatted audio data, or PCM digitized audio data
1304
encode the generic audio data based on a data conveyance protocol to produce the stream of data.
1306
determine whether the control information relates to a local command or a system-level command
1308
system-level or local?
system
local
1310
process the control information for conveyance to a multimedia server to produce a control message
1312
transmit the control message to the multimedia server
1314
process the input signal to produce processed application data
1316
transmit the processed application data to the multimedia server
1318
locally process the input signal to provide the channel of interest to the client

FIG. 55

Tomeso: e0219300

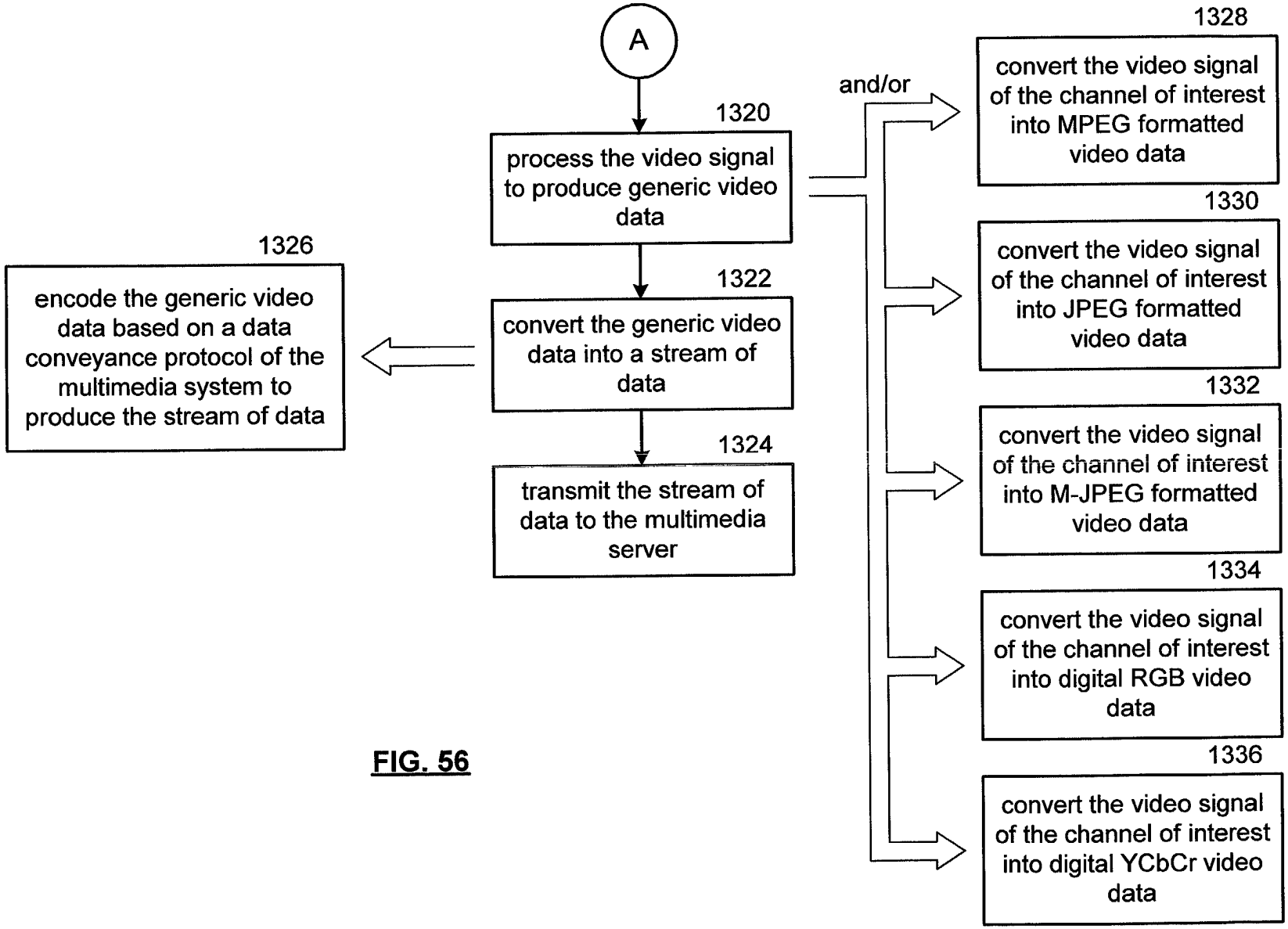


FIG. 56

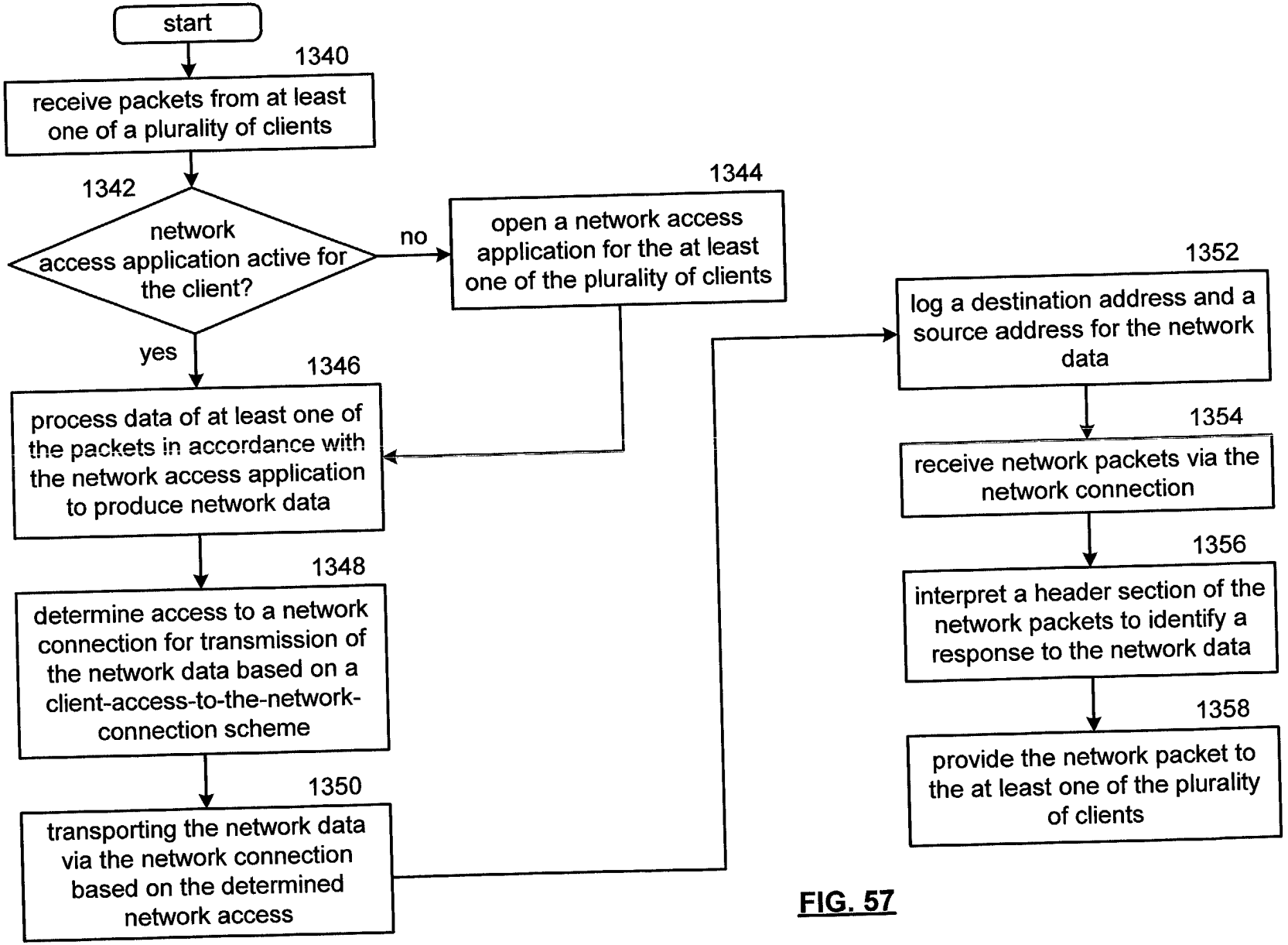

start
1340
receive packets from at least one of a plurality of clients
1342
network access application active for the client?
no
yes
1344
open a network access application for the at least one of the plurality of clients
1346
process data of at least one of the packets in accordance with the network access application to produce network data
1348
determine access to a network connection for transmission of the network data based on a client-access-to-the-network-connection scheme
1350
transporting the network data via the network connection based on the determined network access
1352
log a destination address and a source address for the network data
1354
receive network packets via the network connection
1356
interpret a header section of the network packets to identify a response to the network data
1358
provide the network packet to the at least one of the plurality of clients

FIG. 57

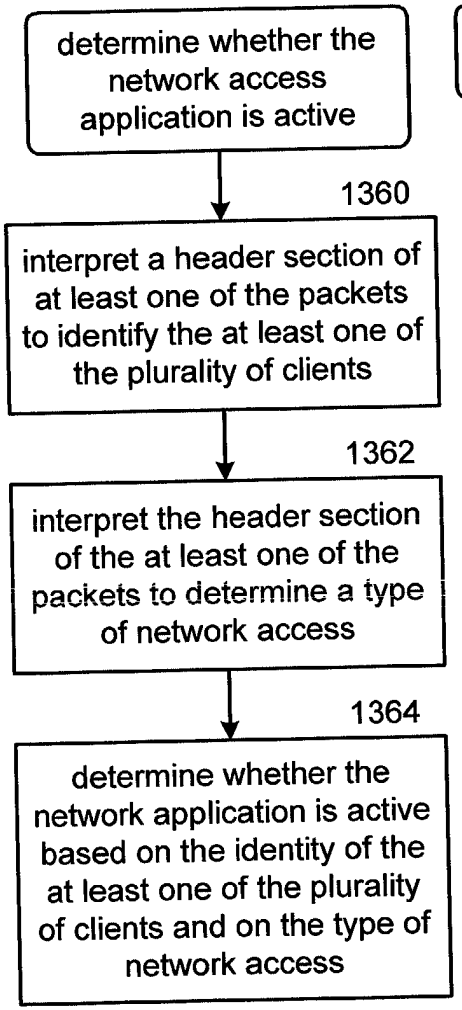


FIG. 58

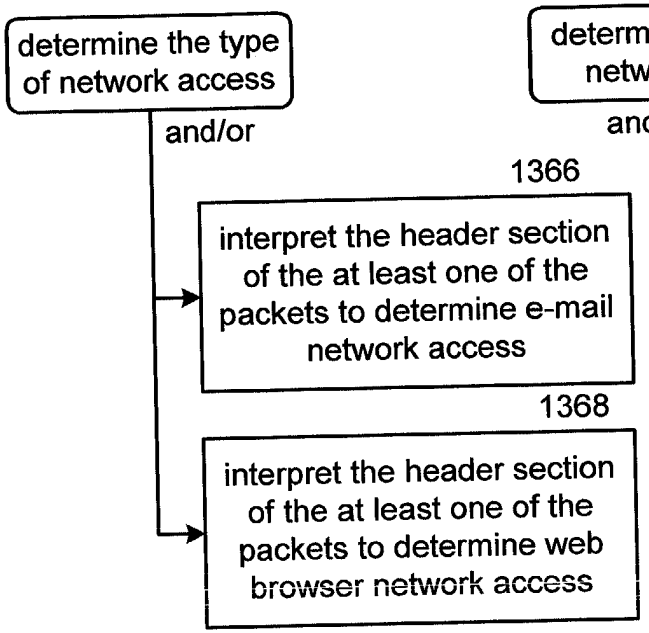


FIG. 59

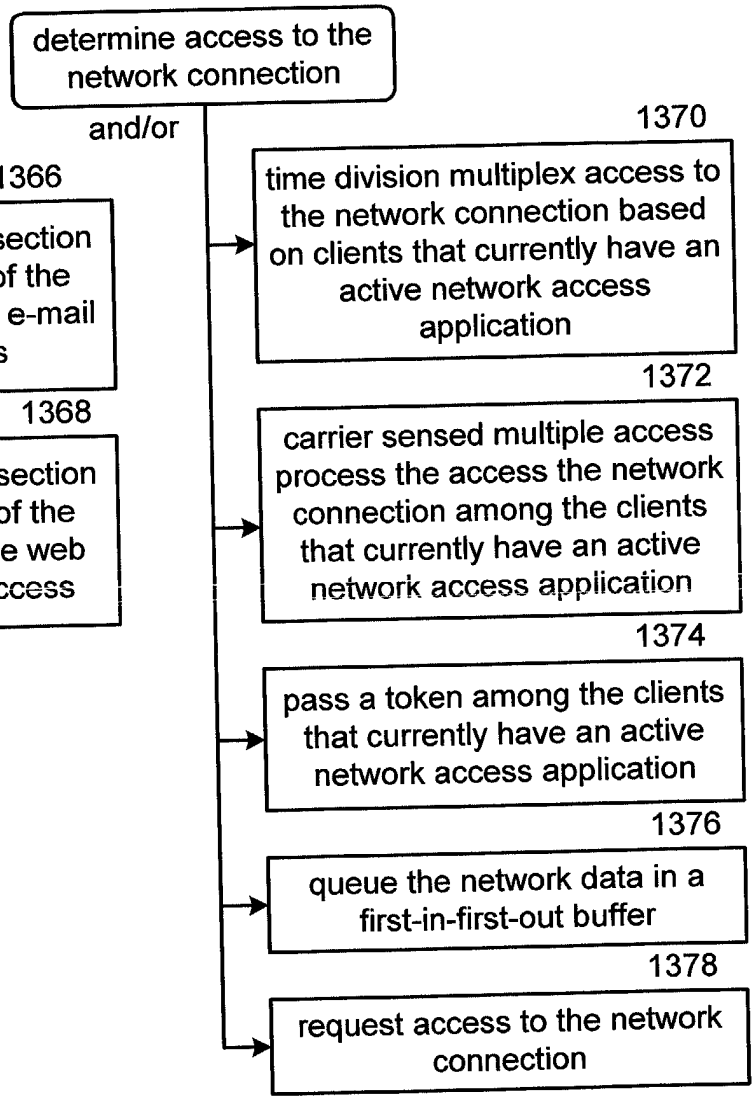


FIG. 60

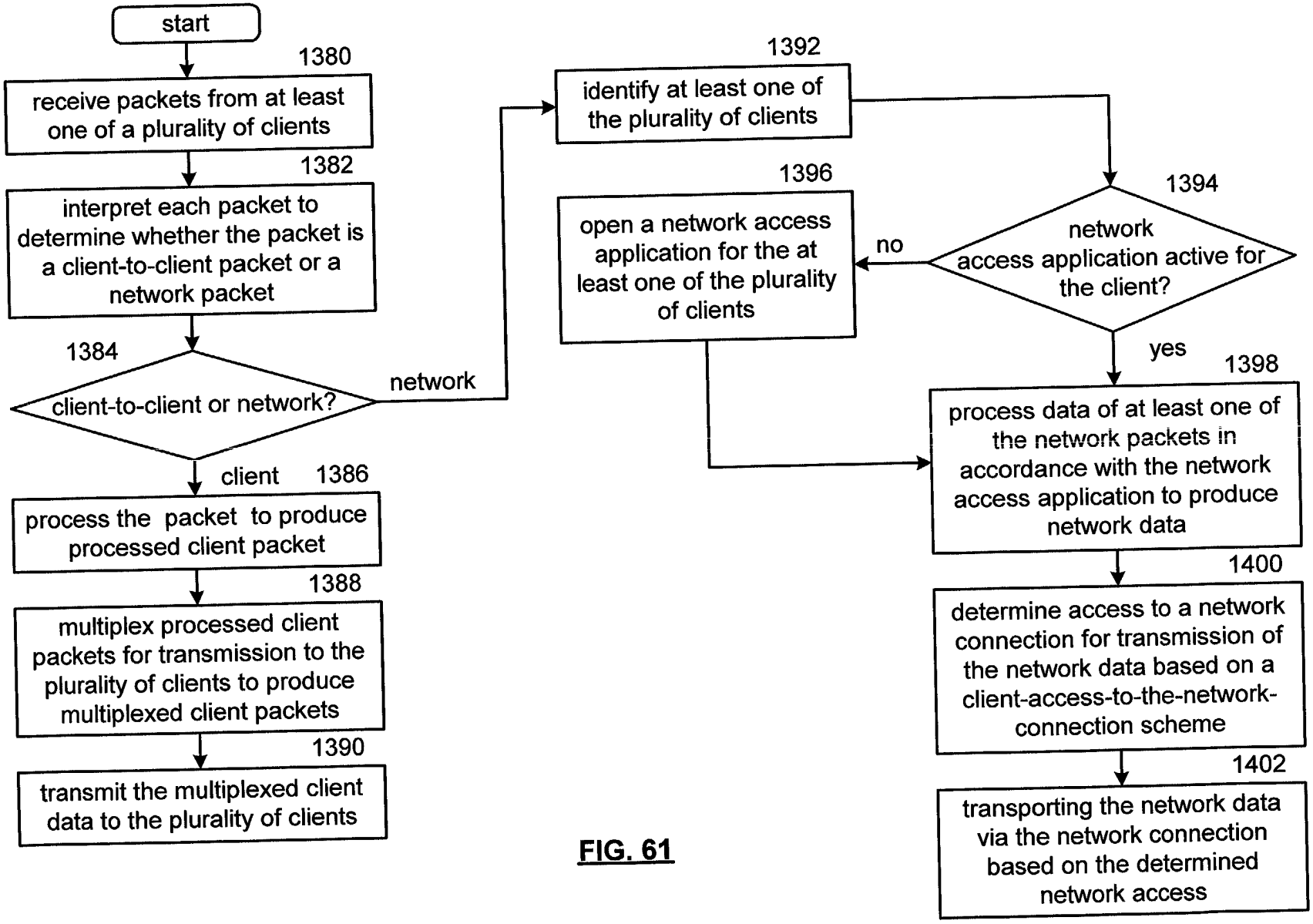

start
1380
receive packets from at least one of a plurality of clients
1382
interpret each packet to determine whether the packet is a client-to-client packet or a network packet
1384
client-to-client or network?
network
client
1386
process the packet to produce processed client packet
1388
multiplex processed client packets for transmission to the plurality of clients to produce multiplexed client packets
1390
transmit the multiplexed client data to the plurality of clients
1392
identify at least one of the plurality of clients
1394
network access application active for the client?
no
1396
open a network access application for the at least one of the plurality of clients
yes
1398
process data of at least one of the network packets in accordance with the network access application to produce network data
1400
determine access to a network connection for transmission of the network data based on a client-access-to-the-network-connection scheme
1402
transporting the network data via the network connection based on the determined network access

FIG. 61

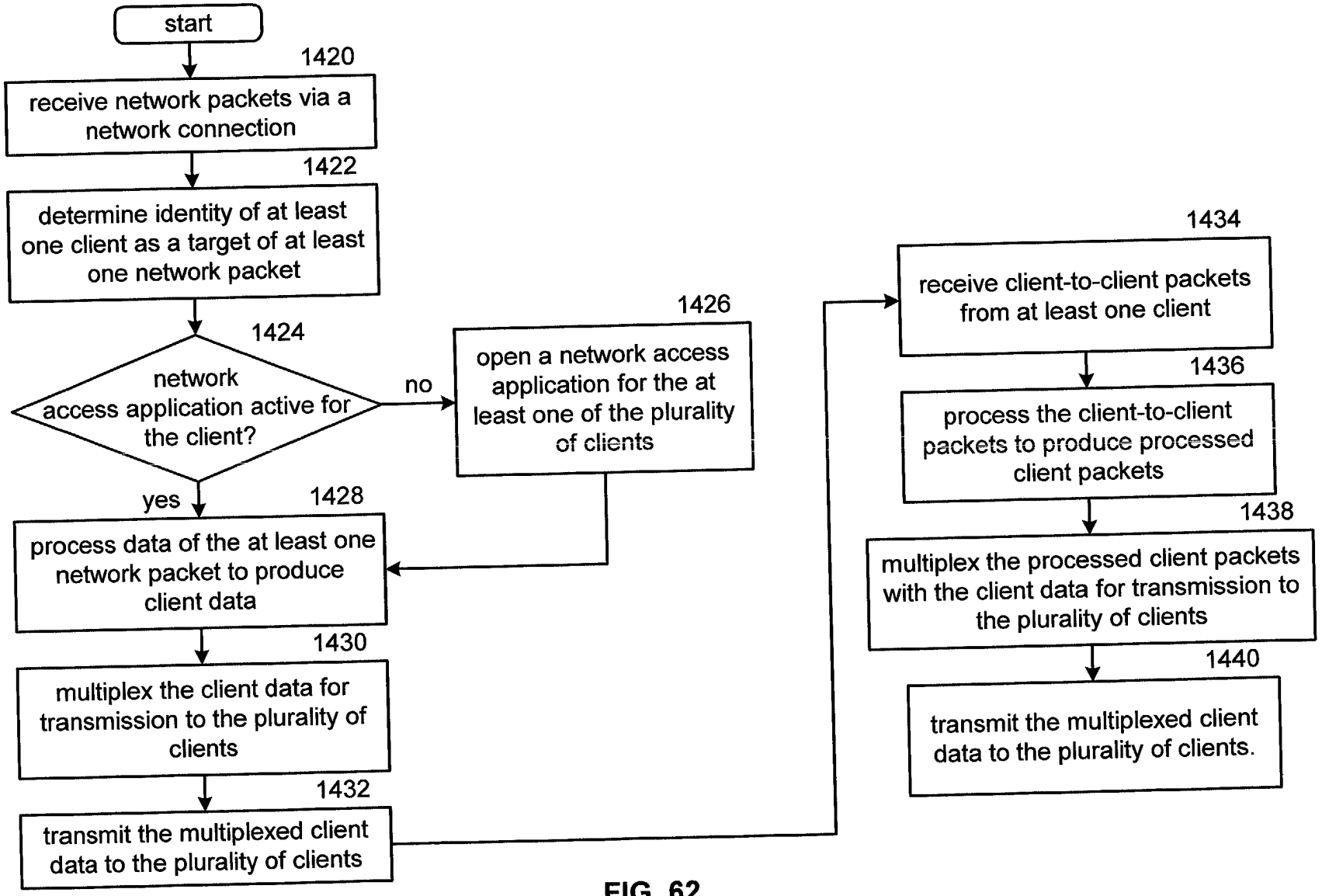

start
1420
receive network packets via a network connection
1422
determine identity of at least one client as a target of at least one network packet
1424
network access application active for the client?
no
1426
open a network access application for the at least one of the plurality of clients
yes
1428
process data of the at least one network packet to produce client data
1430
multiplex the client data for transmission to the plurality of clients
1432
transmit the multiplexed client data to the plurality of clients
1434
receive client-to-client packets from at least one client
1436
process the client-to-client packets to produce processed client packets
1438
multiplex the processed client packets with the client data for transmission to the plurality of clients
1440
transmit the multiplexed client data to the plurality of clients.

FIG. 62

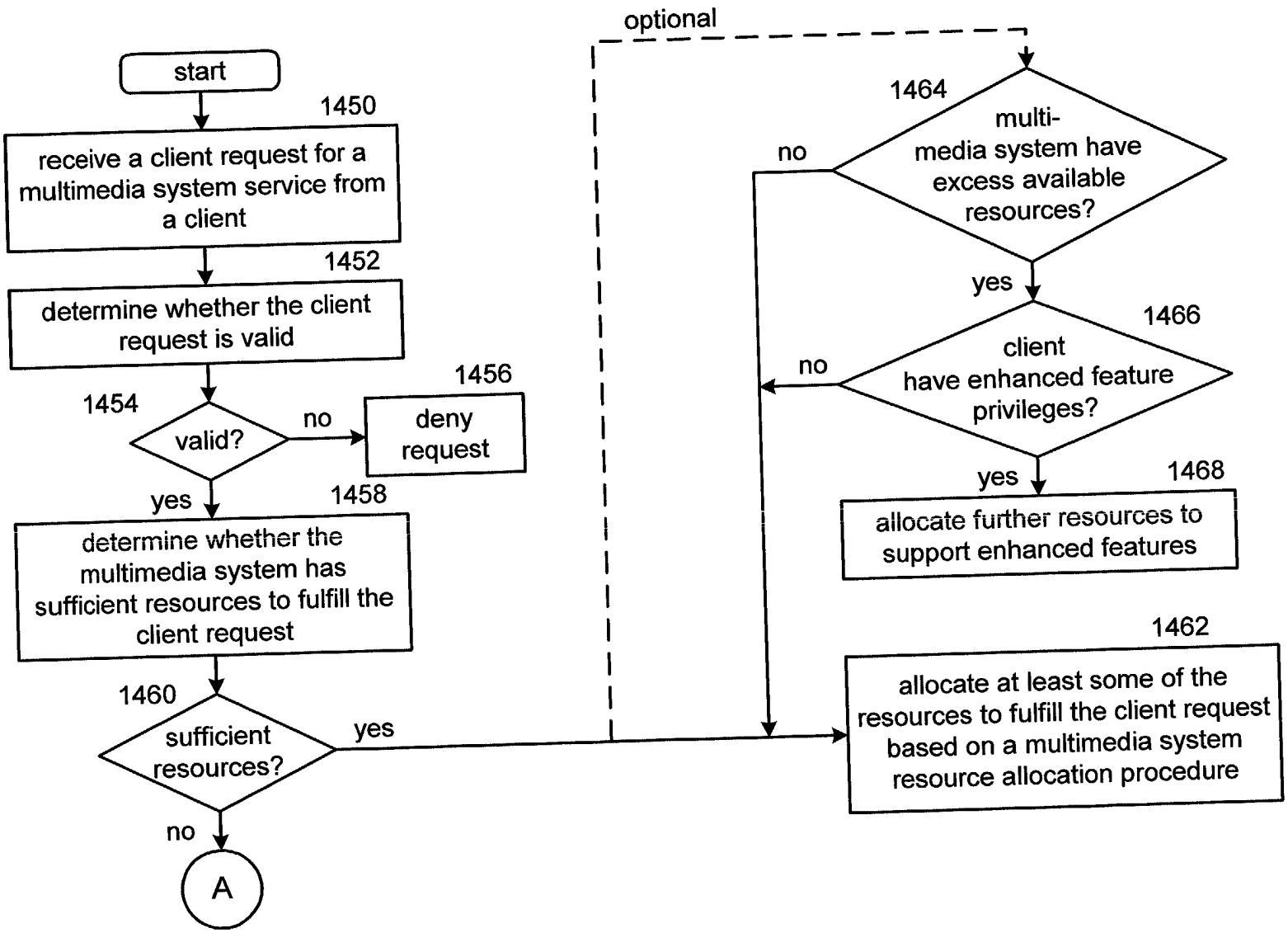

start
1450
receive a client request for a multimedia system service from a client
1452
determine whether the client request is valid
1454
valid?
no
1456
deny request
yes
1458
determine whether the multimedia system has sufficient resources to fulfill the client request
1460
sufficient resources?
yes
no
A
optional
1464
multi-media system have excess available resources?
no
yes
1466
client have enhanced feature privileges?
no
yes
1468
allocate further resources to support enhanced features
1462
allocate at least some of the resources to fulfill the client request based on a multimedia system resource allocation procedure

FIG. 63

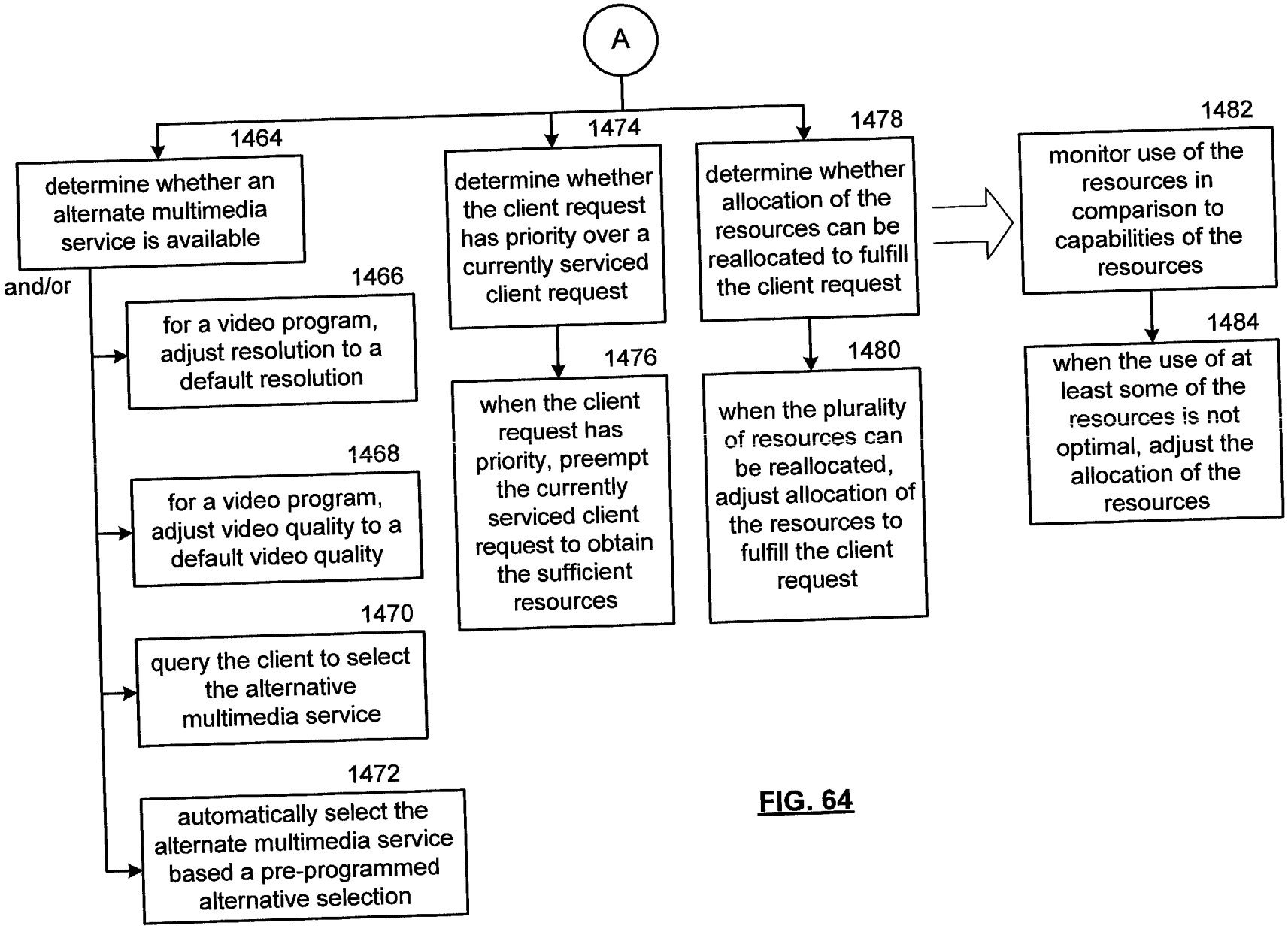
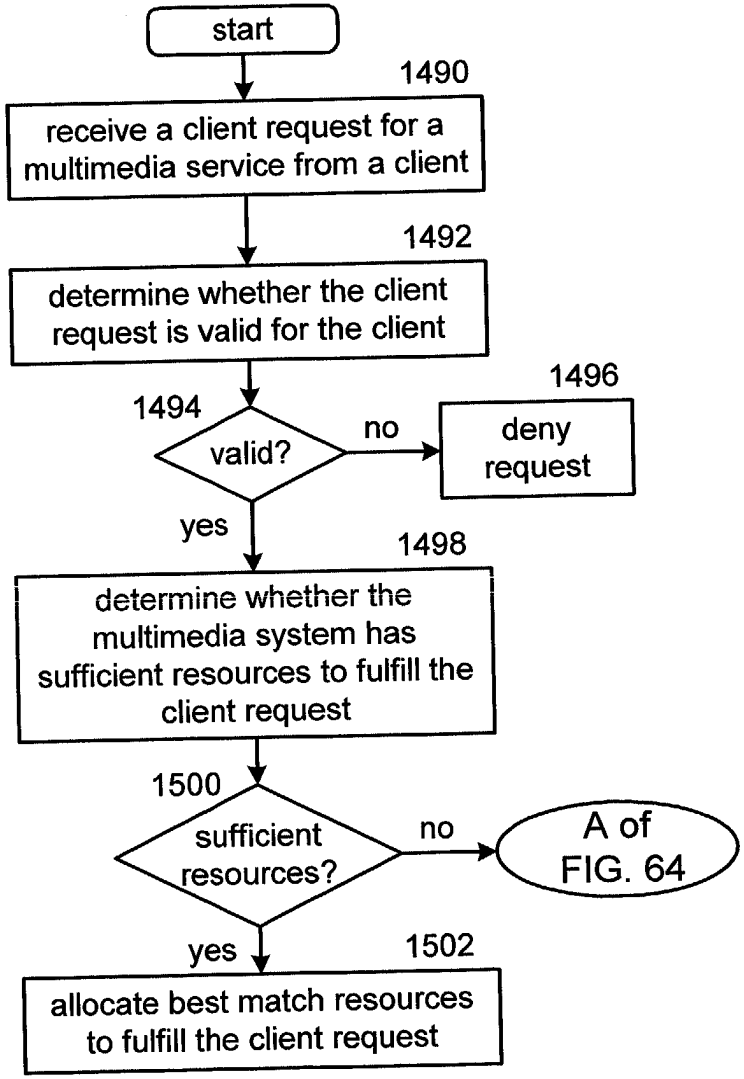

A
1464
determine whether an alternate multimedia service is available
and/or
1466
for a video program, adjust resolution to a default resolution
1468
for a video program, adjust video quality to a default video quality
1470
query the client to select the alternative multimedia service
1472
automatically select the alternate multimedia service based a pre-programmed alternative selection
1474
determine whether the client request has priority over a currently serviced client request
1476
when the client request has priority, preempt the currently serviced client request to obtain the sufficient resources
1478
determine whether allocation of the resources can be reallocated to fulfill the client request
1480
when the plurality of resources can be reallocated, adjust allocation of the resources to fulfill the client request
1482
monitor use of the resources in comparison to capabilities of the resources
1484
when the use of at least some of the resources is not optimal, adjust the allocation of the resources

FIG. 64

Patent Application



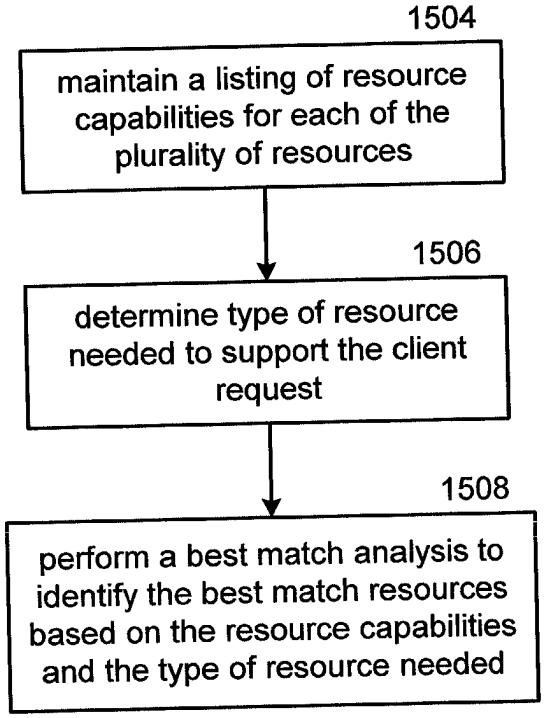


FIG. 65